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ga Hills in 1844.

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encamp on a sand bank in the Diboo
at the base of the Summagoding hill.

JOURNAL

OF THE

LATICE ROSE.

April 1st. - I began my journey from Dihing on the 1st April 1844. By arrangement with Captain Aspinwall, I had a boat ready to start on the 14th of March, but was delayed 14th April 1st. - I started from Dihing at 108 of the Bor Pathar, and followed the river to the village of Dihing, where there are about 300 borahs of people (not all cultivators) and a large number of houses. The Dhunsi river flows on its eastern side, the river being navigable by small boats, and during the cold season the people here are employed in cutting out boats from the fine timbers to be sent down the river. In the vicinity of Bor Pathar, and Dao Panee, there are many villages belonging to the ryots and traders of Dihing, who have no cash enough to pay their rent; they therefore require salt, oil, and cloth. The 3d march brought me to the Dihing Naga hills, and flowing down the Rengthah Naga hills, and flowing into the Dihing river, about 15 miles above Bor Pathar; the next day I turned an island, and so reached the Dibroo Panee river; and the following day, the 1st February, I arrived at Dhemapuri.
5th. No. 70, NEW SERIES.

ived at this post about 2 p. m.,
the coolies, who I despatched
from Golaghat, for the purpose of
a post. Went over to the old fort
of the Dhunsiri, the place was
so covered with jungle, I was unable to distinguish a
some pillars and a gateway; these pillars are of a co
lime, and goor, &c., extremely hard and durable;
in a perfect state of preservation, others have been spl
under by large
trees falling across them; their general height is abo 12 feet and
diameter 4 feet, some of them very neatly carved. These pillars I am
told, formed the ground-work of an extensive building, the dia
between each post about 10 feet, and on these pillars, wa, th
or mechaun. The gateway is of brick, quite perfect n p
must very shortly fall to pieces, as huge trees have taken root on
of it. Some of these trees are very large, from one and a half to two
in diameter. How they thrive up there I cannot imagine; there is also
a wall of eight feet high by four to five feet deep surrounding this
fort. This wall, I suppose, is half a mile square, excepting the eastern
side, where the gateway is; a double ditch surrounds the wall. There
are some fine trees in this fort.

10th February.—Remained to-day to inspect the stockade godown,
godown accounts, &c. The stockade is on the North bank of the Dhunsiri,
and around it is a clearance of about 80 poorahs, cleared by Captain
Bigge in 1841, it is however again becoming a heavy jungle of grass and
underwood. From the several clusters of plants and trees scattered
over this spot, I should say, that the whole of this cleared land had been
cultivated. On my inquiring of the Subadar the cause of this falling
off, he informed me, that the sepoys had formerly cultivated the greater
part of this land; but their being now moved about from place to place,
has prevented their taking any further interest in its cultivation, and
they consequently have given it up. I hereupon ordered the Subadar
to relieve the guard but once in six months, instead of once in four
months: this arrangement will allow of the sepoys cultivating the land
at Dhemapoor and at the other posts. They will sow in June and July,
and reap in November.

11th February.—Started this morning at 8 o'clock A. M. for Summagoding, the heavy rain of last night has made the pathway very wet, and swarming with leeches. Summagoding being too great a distance for my coolies, I determined to encamp on a sand bank in the Diboo Panee river, about three miles from the base of the Summagoding hill; from this spot I could distinctly see the houses of the Naga village; here the river is rather broad, huge stones and the wrecks of large and small trees lie in a confused mass. The Diboo Panee is a fine river, much broader and more rapid than the Dhunsiri, its banks are very low, and during the rainy season, the country for several hundred yards inland is inundated. The path from Dhemapor runs in a S. S. E. direction for about five miles, when meeting the Diboo Panee, it followed its banks to my encampment.

12th February.—At 8 o'clock A. M. started, and arrived at the foot of the hill in about an hour and a half, the path tolerably good, but blocked up in some places by fallen trees and *bet* jungle, the latter strewed across the road by wild elephants, &c. On my way up, came upon two or three spots of cultivation, belonging to the Summagoding Nagas; another hour's march brought me up to the village, which is on the very summit of the hill. About a quarter of a mile from the village, I was met by the two Gaon Booras, who received me most civilly, and welcomed me to their village. I had thought of remaining here this day, but finding that water was very scarce, it being brought up in bamboo *chongahs* from the Diboo Panee, at the Southern base of this hill, I determined to proceed down to the river and there encamp.

I remained in the village for a couple of hours, to rest my coolies and people, and to hear any complaints the villagers might have to make against the other tribe of Nagas. The Gaon Booras on this informed me, that about two years ago, some Nagas of the Kohema tribe had seized two men and one woman of their village, who were going to their field for rice; they had since offered to ransom them, but their offers were so exorbitant, they could not agree with them. Having told them I would investigate their complaints, and having given them some presents, I took my leave; they appeared much pleased with their presents, and went away in high spirits. Summagoding is a fine high hill, height I suppose 2000 feet. On the very summit of it, is the village

"Summagoding," it contains about 100 houses; the men I found to be civil and obliging, but very independent in their notions; they are, however, tributary to the Khonoma Nagas. The river at this point is very narrow, and runs through two high perpendicular walls of rock, the rush of water during the rains is very considerable, width of river not more than 60 feet.

13th February.—Started at half-past 8 o'clock A. M. for Raja-piama, to inspect the tea lands reported to be in those hills; round along the bed of the Diboo Panee, stepping very slippery on the large stones in the river, hardly a pebble or grain of sand to be seen, the bed of the river being filled with large round stones. An hour and a half brought us to the foot of the Raja-piama hills, water nearly the whole way very shallow. Here I directed my people to remain and encamp, whilst I proceeded to the Raja-piama village to look at the tea, accompanied by my *teeklas*, and guard. On arriving at the village, I was met by Jeéreebee Gaon Boora; as unfortunately for me this was a grand festival day with them, the whole party was more or less intoxicated, the Gaon Boora, as head man, more so than his brethren; he nevertheless received me most cordially, and invitingly pressed me to taste of his "*futtica*,"* which to humour him, I put to my lips. After a little further conversation, I requested to be shewn the tea; Jeéreebee immediately escorted me to the spot, where I saw the tea plant growing most abundantly and luxuriantly immediately near to the village; I followed the tea for some distance, and saw very many spots covered with it. Jeéreebee gave me to understand, that the whole of his low hills were covered with tea. I think this may be possible, for tea has been found among the Bazee-piama hills, but in small quantities. The leaves of the plant are large, and of a finer kind than what I have generally seen in the Seeb-sagur and Muttuck divisions. I asked Jeéreebee if he had any objections to my sending up Assamese tea-makers to manufacture the tea on the spot, telling him that I would give him *monees*,† salt, daws, &c., to which, he replied, he would be very happy to accommodate in any way, and that I should be welcome to send up the Assamese tea-makers, and that he would protect them. He agreed also to supply

* A fermented liquor from grain.

† Beads.

them with provisions on my giving him *monees*, salt, &c. In return I cannot say how much tea there may be in these hills, but I am of opinion, that it extends over a great part of these low hills. The late Mr. Orange mentions having met with it among the Jappama and Jykanee Nagas. The Mazepamah and Bezepanoah, have it also on their hills. On my asking him for the fine cloths he had engaged to pay annually to Government, he asked me whether his neighbors and other Nagas had given me in theirs; I told him that some had, and that I was going round to the others, to collect. He told me that he could not give me his five, until the Konoma and Mozoma (his superiors,) had given in theirs; to which I replied, I should remain in his village, until he gave me the five cloths he had agreed to pay to Government, and that I could not go away without them. On this, he had a conference with his chiefs, and presently afterwards Jeereebee brought me his five cloths, but with a very bad grace. I gave him and his four Gaon Booras some presents, with which they were highly pleased, and we parted very good friends. Some of the Naga ryots brought me to my encampment some tea seeds, which they bartered for salt and *monees*. I endeavoured to procure some rice from the Nagas, but they told me, that they had a bad crop that season, and had not a sufficiency for themselves; having been obliged to purchase a supply for their present consumption, they could not afford to give me more than one maund; this of course could not go very far among my people. I had only brought five days' provisions with me from Dhemapor, half of which was now expended; I therefore determined to return to Dhemapor, where I expected certain Naga chiefs, whom I had summoned, awaiting my arrival.

14th February.—At 8 o'clock A. M. started from Summagoding, and arrived at 4 o'clock P. M., at our first encampment on the Dibad Panee, this was a long day's march; the route for six miles ran in the bed of the river, sometimes water up to our waists, and extremely cold, coolies very much distressed, footing very uncertain here. On arriving at the south-eastern base of the Summagoding range, we were unable to proceed further along the bed of the river, owing to the deep pools, walls of rock, and rapids. We here came upon Captain Bigge's road across the hills east of Summagoding. This road or pathway crosses three or

four of those hills, average height from 500 to 600 feet, it is tolerably good but jungle (grass and underwood) has again sprung up in it; the bridge and embankments then made by Captain Bigge, have given way, the wood with which they were made, having rotted. Distance across these hills about three miles; having crossed these low hills, we came again on the Diboo Panee river on the northern base of Summagoding and having followed it about three miles further, we came to our first encampment on this river, coolies, followers, nay all of us, much fagged. On my asking the coolies which route they preferred, they gave the preference to the Naga route across the Summagoding hill. I am also of opinion, that the latter route is preferable to foot passengers; and Captain Bigge's for elephants, horses and cattle; the Naga route is passable throughout the year, whilst the road made by Captain Bigge is passable for only three months in the year when the river is low, and the route can be taken along its bed.

On my return from Raja-piama to-day, a Maun sepoy pointed out to me some tea plants; he took me up a nullah for about 200 yards, we then came upon some high land, and on both sides of this nullah saw the tea plant. On my asking him how he came to know this spot, he informed me, that he had accompanied Captain Bigge in his late expedition, and that they had encamped somewhere near here; that he came here searching for fuel and fell upon the tea; the plants were rather thinly scattered, but there were plenty of them round about in the jungle, some of the trees were large, 20 feet high, and 4 to 5 inches in diameter. This nullah falls into the Diboo Panee river, on its north side, and is about two and half miles from the southern base of the Summagoding hill.

15th February.—Started at 8 o'clock A. M., and arrived at Dhemapoor at 11½ A. M. No Naga chiefs had arrived; coolies I had left behind me here, hard at work at the godown and stockade, grass for thatching very scarce, and is only procurable about two miles distant from the stockade.

16th February.—Chiefs of the Mozoma and Bazepama tribes came in to pay their respects, gave them some presents.

17th February.—As the Upper Rengmah Naga chiefs had not arrived here at my calling, I propose going to Mohung, there to meet them,

isit the *pharree* there, and have a conference with Tularam Seenaputti, regarding the very irregular and lawless conduct of certain of his Kacharee ryots, who are constantly embroiling the Nagas in quarrel one with another, taking the part of the stronger party, and assisting hem in looting the weaker one, taking for themselves a good share of he spoils; they go armed with muskets, consequently have very great dvantage over the unfortunate Nagas. If also two Naga tribes wish o fight with one another, the richer party purchase the assistance of a ew Kacharees, (armed with muskets,) and are sure of becoming the ictors; the Kacharees receiving a handsome reward, are always ready o give their assistance to the richer party.

18th February.—Started from Dhemapor for Mohung at 7 o'clock . m., and encamped at 3 o'clock p. m., on the Pokaree Jhan, a small treamlet about 13 feet wide, distance about 16 miles; route from Dhemapor in a South-westerly direction, path very good requiring but ittle repairs, bridges to be made over several nullahs. This road was ade by Tularam Sennaputti in 1841. This road leads the whole way rom Dhemapor through Tularam's own country.

19th February.—Started from Pokaree Jhan, and arrived at Mohung half-past 2 o'clock p. m., distance to-day about 14 miles, path good, hrough fine open tree jungle to the Jaminoona river, about three miles from Mohung. Here we crossed the Jummoona, and came into a grassy and kuggree jungle, rain drizzling the whole day. The Jummoona is supposed to have its source near to the Topokhing Naga hills, where we crossed it; the river is about 100 feet wide, and very rapid, water up to our middle. The Diboo falls into the Jummoona about a quarter of a mile above the path on its right bank, and again the Diboo river falls into the Jummoona on its left bank about half a mile below the path.

20th February.—Mohung is a town of about 45 to 50 houses on the north bank of the Jummoona, the river is in front of the village, which is here from 80 to 90 feet broad; population Ahoms and Cacharees. Here is a *pharree* under the Jummoonah Mookh thannah, consisting of one Police mohurir and two tecklahs. On the low hills to the north of Mohung are several villages of Meekirs; they are a fine hardy set of men, and make civil and obliging coolies. These people seldom remain

more than three years on the same piece of land ; they prefer clearing new tree jungle to remaining longer, as by that time grass and ekra jungle overrun their clearances, which they find more difficult to eradicate than clearing new tree jungle ; they cultivate vast quantities of cotton, which they dispose of to the Assamese ryots and traders for cash and salt. Cotton thrives beautifully in almost all these low hills. On the higher range to the north of the Meekirs, are the upper Renmah Nagas, some of their villages are but one, and others two days' march from Mohung. Despatched the Kutkees to summon in the chiefs with their cloths, and also a messenger to Tularam Seenaputti, requesting an interview with him at Ramsah, a small village to the west of this a few miles.

21st February.—Not wishing to remain idle here until the arrival of the Naga chiefs and Tularam Seenaputti, I proceeded to the falls of the Jummoona, a distance of about five miles below Mohung, passed through the small village of Ramsah on the north of the Jummoona, and from there, half an hour's walk took us to the falls. Here I encamped for the day, and went to inspect these falls ; chalk, coal, and lime, said to be in their vicinity, these falls are of one continuation for about half a mile. The first of about 30 perpendicular feet ; 2d, about 20 ; 3d, of 12 ; 4th, of 10 feet, and so diminishing until they settle down into the rapids. The river above the falls is full to its banks, below very rapid, with many deep pools. Its banks here are of rock and of hard red sandstone ; some of the rocks in the bed of the river are of immense size. During the rainy season, the body of water rushing down this spot, must be very considerable. There are small hills, height about 150 feet on each bank of the river at the falls. About half a mile from the falls I came upon the chalk as mentioned in the late Mr. Grange's Journal, I found it in the bed of the river, and also two small nullahs falling into the Jummoona. There is a large quantity of it ; but I am of opinion it is pipe clay and not chalk. The coal too I saw ; it is in a small nullah at the eastern base of these small hills on the north bank of the river. The stratum is small and in the bed of this nullah ; but not having the necessary instruments for excavating, I was unable to get any good specimens, I however brought away with me a few pieces ; the upper seam was of a soft blackish substance and easily crumbled in the hand ;

ow this, the coal was brittle, and broke into many small pieces. I had nothing but a Naga spear with me, so could not reach the solid coal. I told the Ramsah Gaon Boorah who was with me, to send me some good specimens, and I would reward him. The lime was some miles below the falls, and too far away for me to visit to-day. I was told by some Meekirs that a small quantity lay in store, or rather had been in store there, but the house in which it was stored, having been burnt down, the lime lay exposed, and became one hard mass and was bolted. Cotton traders from Mohung Ramsah above are here obliged to change boats; the cotton is carried over the small hills below the rapids, and there put into other boats. Thunder storm and rain all night.

22d February.—Returned to Ramsah to await the Seenaputti's arrival. Ramsah is a small village on the north bank of the Jummoo with about twenty houses, population Ahoms and Cacharees. Here met five Coosiyahs, they had come from Amoepoonjee, and had brought with them daws, kodals, and a few brass utensils, which they barter with the Nagas, Meekirs and Cacharees. I thought the articles very cheap, considering the distance they bring them from. Daws four annas, and kodalees seven and eight annas; they tell me some of their people come over yearly to trade and barter with these Nagas (Rengmas,) Meekirs and Cacharees.

23d February.—Waited till 12 A. M. for Tularam Seenaputti, but he not arriving, I left a message for him to follow me to Dholung, and then started for that village; drizzling rain the whole day. Path very wet.

24th February.—Tularam Seenaputti arrived last evening, and came to-day to pay his respects. Informed him of the frequent disturbances created among the Nagas by some of his Cacharee ryots, residing at and near Semkur, and requested he would have a stop put to such proceedings. I at the same time told him, that I had given orders to the Maun subadar to seize all such parties and to send them down to Golaghat, when they would be dealt with as my superiors would direct, that these aggressions were illegal, and if he did not put a stop to them, that he would be answerable for these aggressions of his ryots. On this he replied, that he was as anxious as myself to put a stop to such

proceedings, and had despatched some of his people for that purpose but these Semkur Cacharees minded not his orders, and he had no the means at hand of enforcing them. * * * * The Upper Rengmah Naga chiefs now arrived, bringing with them their *tall bunda* of cloths, all excepting seven; which seven I directed the chiefs to give to the Subadar at Dhemapoor, who would forward them on to me. All the chiefs but one were present; the absent chief's village being three days' march from Mohung, the Kutkees did not reach that distance. I however told the others, (his brethren,) to tell the absent chief to take his cloth to the Subadar at Dhemapoor. These chiefs complained against those of the Jokophang tribe, for allowing the Abor Nagas, when the latter came in their marauding expedition against the Rengmas, to rest in their (the Jokophang) village, and showing them the route to the Rengmah villages, and in some instances joining these Abors, and fighting with them. I hereupon took the Jokophang chiefs to task, and informed them, that I would hold them responsible for any further aggressions against these Rengmah Nagas, for without their assistance, I was firmly of opinion, that the Abors could not come thus far to commit these marauding expeditions. The Jokophang Nagas replied, that they were a small village, and when the Abors came, they always came in large numbers; and that they, to save themselves, had shewn the route to the Rengmah villages, but had never once joined such parties of Abors with the intention of looting. I told them that when the Abors again came to their village not to allow them to remain, but to inform the Subadar at Dhemapoor, who was but one day's march from Jokophang, and who would protect both them and the Rengmah Nagas; they agreed to this arrangement. I gave them some presents and their dismissal. The Rengmah chiefs were willing to accompany me to Golaghat, but said that now it was too late for them, as they were about to commence their crops, they would prefer therefore paying me a visit at Golaghat early this approaching cold season. The whole of the Rengmah Nagas were formerly under one chief, but about the time of the Burmese invasion, separated. Seven villages remained in their old hills, and seven villages went over towards Mohung; the former trade with the Assamese at Golaghat, the latter with Assamese, Cacharees, and Meekirs at Mohung, and below that village. Having now executed all I had or

wished to do at Mohung, I purpose starting for Dhemapoor to-morrow morning; a severe thunder storm with torrents of rain this evening. There is a guard of one Naick and four sepoys. No complaints made by any of the Assam Militia either at Mohung or Ramsah. On my asking if they had any complaints to make against them, the ryots said, No.

25th February.—Started from Mohung on my return to Dhemapoor, and arrived at my former encampment on the Pokorijhan; drizzling rain the whole day. On crossing the Jummoona, we found that river had risen upwards of a foot since our previously crossing it; water nearly breast high, obliged to ford, no boat at hand, path very wet, leeches in abundance, rain all night.

26th February.—Started from Pokorijhan and arrived at three o'clock p. m. at Dhemapoor. No Naga chiefs having arrived, and the season being far advanced for further proceedings, I propose returning to Golaghat by water, surveying the Dhunsiri down to Golaghat. The stockade is now completed, and the godown and guard house repaired. I left instructions with the Subadar to send up Kutkees to the Konoma Naga chiefs, summoning them to Golaghat, there to meet me, as they did not think proper to meet me at Dhemapoor.

27th February.—Commenced my survey of the Dhunsiri river, assisted by Gunga Dhur Dey, formerly an ameen in Mr. Thornton's Survey Office, and who had volunteered to accompany me.

28th February.—At 6 o'clock p. m. we arrived near to the Diboo Pance.

29th February.—The 2d day near to the Hurreeojan.

1st March.—The 3d day Dao Pance and 4th day Bor Puther. Here I received a report from my Darogah, informing me, that Captain Brodie, Principal Assistant Sibesagur division, had been awaiting my return for two days, and that Captain Brodie would start for Sibesagur on the morning of the 2d March; wishing much to have an interview with that officer, respecting the arrangements he might wish to be made at Golaghat, I left the finishing of the survey with Gunga Dhur Dey, Ameen.

2d March.—At and at day-light the following morning started by land for Golaghat, and arrived at this station at 10 o'clock p. m.; but too late to see Captain Brodie, who had started that morning at 3 o'clock A. M.

I have the pleasure to annex a separate description of the rivers and roads I met with in my tour.

The Dhunsiri is a fine large river, its general width from Dhempoor Rivers. to the point where the Dayong river falls into the The Dhunsiri. Dhunsiri, is from 200 to 250 feet; it then considerably widens, and from this point to Golaghat and below, the width is from 350 to 500 feet; its banks are in general low, and during the heavy rains of August, the country for a considerable distance inland, is inundated. There are on the banks and in their vicinity some very fine timbers, such as Nahor,¹ Holock,² Shan,³ Jamoo,⁴ Teta,⁵ Ajar,⁶ Gondhoree,⁷ Khodmid,⁸ Heelgomarce,⁹ Amoree,¹⁰ Soppah,¹¹ Heeleeka,¹² and Ajot.¹³ The river the whole way from Dhempoor to Bor Pathur is fordable during the months of December, January and February; in many places the water shallows to six inches; boat are obliged to be drawn over these shallows, some of them run a considerable distance. This dragging of boats is rather fatiguing work, and no boats beyond 8 to 10 maunds burden, can proceed to Dhempoor from this, during these three months. The Dhunsiri from a little below the Namber Nuddee to the Diboo Panee Mookh, is filled with the wrecks of large and small trees, washed into the river during the rains and falling in from its banks; the navigation is extremely tedious and fatiguing; in some places boats are to be dragged across the shallows, in others the passage is stopt up by the fallen trees, which must be removed, and a channel sufficiently large for the boats to pass cleared; cutting through a large tree, taking four men an hour to cut through it; in some places boats are dragged over these fallen trees, and in others passing under them; the current of this river is very sluggish during the months of December, January, February and March. The water is good and clear during these four months, after March, the water becomes thick and muddy.

The Namber is a small hill stream coming from the Rengmah Naga Number. hills, about 60 feet wide, with a fine sandy bed. About a mile from its confluence with the Dhunsiri on its north bank,

¹ *Messnaferrea*, ² *Diptero Carpus*, ³ *Artocarpus chaplasha*, ⁴ *Eugenia*, ⁵ *Mechelia*.

⁶ *Lagerstræmica Regiae*, ⁷ *Laurus Sassafras*, ⁸ _____ ? ⁹ *Gmelina* ? ¹⁰ _____ ?

¹¹ *Michelia* ? ¹² *Terminalia citrina*, ¹³ _____ ?

a small salt spring ; the brine is very thin and weak, and to the tongue hardly perceptible : in appearance this spring is like unto numberless little fountains continually bubbling, a large mass of this water is constantly flowing out. The river, about one and a half mile from this, is another salt spring, but much larger, though the quantity of water is less : the brine is equally weak. The expense of manufacturing salt here, would I am afraid, be very great, and never repay the maker. About a mile from this, in a southerly direction are the Namber falls ; the fall here is about 15 feet perpendicular, near to this, in the bed of the river, I found a confused mass, in huge blocks of shells, limestone, &c. The lime is of a superior kind, but difficult to be worked, as the river is too shallow for boats to proceed up so far ; the banks are low, and during the rains, the Namber overflows its banks to a considerable extent. This river falls into the Dhunsiri seventeen miles above Golaghat.

The Dao Panee river takes it course from the Rengmah Naga hills ; it is very rapid, about 100 feet wide, with a fine sandy bottom ; its banks are covered with small timber, water shallow, during the cold season it falls into the Dhunsiri, forty-five miles above Golaghat, and sixteen miles above Bor Pather. The Rengmah Nagas were formerly settled on its bank, close under the hills, but were driven from thence by the inroads of their enemies, the Lota, Tokophang and Abor Nagas ; from being once a populous and powerful people, they have become weak and scattered. I have intimated to the Rengmah Naga chiefs, that if they will again settle on the Dao Panee, I would allow them a guard to protect them ; the guard will also be convenient in keeping open the communication between Golaghat and Dhemapoor during the rains. Since my return to this station, I called together the chiefs of the Rengmah and Lota tribes, and am happy to say, that I have succeeded in settling their former differences amicably ; they have agreed to trade together at Golaghat, and for the future to be friends, their differences were settled over a grand feast that I gave them ; three villages of the Rengmabs have since this, commenced clearing lands on the Dao Panee for their habitation. This is a good beginning, and I am in hopes the remaining villages will soon follow their example.

The Hurreeojan is a small muddy nullah, coming from the Jokophang Hurreeojan River. Naga hills ; the North bank is Tularam Sennaputti's southern boundary ; it falls into the Dhunsiri, 28 miles below Dhemapoor.

The Diboo Panee is a noble stream, as wide, if not wider than the Dhunsiri, and much more rapid ; it falls into the latter river 10 miles below Dhemapor. This river I believe, comes from the Konoma range of hills during the rainy season ; a large quantity of wrecks of trees is swept from this river into the Dhunsiri. A few miles from its confluence with the Dhunsiri, the bed of this river is filled with huge roundish stones, for the most part its banks are composed of these large stones mixed with gravel and earth.

The Jummoona river is already well known, therefore no further mention may be required from me.

By the present route, the total distance from Golaghat to Dhemapor is about 60 miles ; this might be considerably shortened, say Roads. by 10 miles, and a good open path 10 feet wide through the heavy tree jungle, be cut for Co's Rs. 40 per mile, total expence would be Co's Rs. 2,080. The path at present from Golaghat to the Namber is very inferior, for the most part running through broken ground, distance 10 miles ; from the Namber to Bor Pather, path tolerably good, through open tree jungle and high country, intersected by many small nullahs, which require bridges, distance eight miles. From Bor Pather to Dao Panee tolerably good, many swamps and nullahs intersect the path, distance nine miles. From Dao Panee river to Hurreeojan, very inferior, the path is more like a wild animal's track than a road, distance 12 miles. From Hurreeojan to the Diboo Panee river again very inferior, swamps and nullahs are in abundance, distance 13 miles. From the Diboo Panee to Dhemapor no route, except in the bed of the Dhunsiri, and this only passable during the three months of December, January, and February, when the water is shallow ; distance nine miles, total distance by present route 61 miles. By the route I have sketched in the map, this distance may be shortened by 10 miles. I should prefer the road from Golaghat to Bor Pather running through Nagorah and across to Bor Pather, to the Namber Nuddee route ; the land is high and better adapted for a road, besides being the means of opening a direct communication between Golaghat and the large Mouzahs of Nagorah Geladharee, Mackreong, &c. which is at present much required. The road from Dhemapor to Summagoding made by Capt. Bigge is rather circuitous, and leads for three miles along the

path bank of the Diboo Panee, it then enters the bed of that river and proceeds thus for three miles, when it reaches the hills on the eastern base of the Summagoding range; the road crosses these hills (distance three miles,) it again enters the bed of the river for another two miles and then comes to the southern base of the Summagoding hills; from here to the foot of the Rajahpiama hills, the road is in the bed of the river, and there stops. Captain Bigge had a path cut in the jungle (grass) along the edge of the bank, but this has been entirely cut away by the encroachments of the river. The route along the bed of the river is very tedious and fatiguing, being for the most part over large stones and rocks, stepping exceedingly slippery, and the remainder through the water, which in some places is up to a man's middle. The path by which the Summagoding Nagas and others come to Dhemapoor, is the more direct of the two. I went to Summagoding by the Naga route, and returned by Captain Bigge's; the coolies and people who accompanied me preferred the Naga route, and I also gave it the preference; for although the ascent to Summagoding is rather tedious, it is far less fatiguing of the two. The distance direct from Dhemapoor to Summagoding by Captain Bigge's route is 18 miles, by the Nagas, 15 miles. To persons wishing to proceed to the Konoma Naga hills and beyond, Captain Bigge's route would be preferable. Elephants and horses can also go by this route, but to Summagoding the Naga route is the better of the two; neither horses nor elephants can ascend the Summagoding hills, as in some places the rocks are so steep, that steps have been cut in them to enable persons to go up by. For 3000 Rs. a good pathway might be made from Dhemapoor to Raja piama, passable throughout the year. I would take the path over the low hills in preference to trusting to the water-course. If this sum were sanctioned and I permitted, I should be most happy to superintend the road. Early in December is the best season for road-making, the country is then passable, and the ryots have finished with their crops, and willing to work.

Notes taken on a Tour through parts of Baloochisthan, in 1838 and 1839, by Hajee Abdun Nubee, of Kabul. Arranged and translated by Major ROBERT LEECH.

(Concluded from p. 706.)

From Bampooor to Oodeean is a 4 days' journey over a waste, having Oodeean. no habitations, and even no water to a traveller without a good guide to lead him to the different pools. Fodder for camels is however plentiful. The village of Oodeean is a small one, about Cultivation. the size of Kalag, and as scantily cultivated; it produces wheat, barley, sesame, peas of the mash and niah kind, beans, juwaree and dates.

The chiefs of Oodeean are Shahbuz Khan and Buhram Khan, uncle of Mahomed Aly of Bampooor. They are Narvees, and the inhabitants are called Oodeanees, who are neither Baloochees or Persians, Sunnees or Sheeahs. They are tributary to Narmasher, and pay a revenue of 500 packages of dates, and their own chiefs collect 1-5th of the grain produce.

Deer are so plentiful at Oodeean, that the inhabitants can as easily cook venison for a guest as mutton, and indeed they live much on it themselves; these animals do great damage to the crops.

The following is the road to Nurmasher from Oodeean: first stage Road. Juruft; second waste; third the remote dry lands of Bam; fourth Narmasher.

Ramishk is a small place, dependent on Bashkurd or Bashakerd, the chief of which district is Ala Verdy Khan, who is dependent Ramishk. on the Governor of Seer. The chief, or kudhkhuda of Ramishk is Kareem, who collects 1-5th of the produce. From Ramishk Road. to Jusk direct is very difficult hilly road as follows: first stage Keelan; second Zameendar; third Boekun; fourth Gorabeen; fifth Budee; and sixth Jusk. The distance may be 50 kos; and the direction of the road S. W. The road is difficult even for footmen; there are no habitations, and it is much infested by thieves.

The cultivation of Punoch is not extensive, it consists of barley Punoch. wheat, juwaree, rice, tobacco and dates.

Kuteck and Matarabad are included in Punoch, which pays a tribute of 40 tomans Kujaree ready money, 10,000 maunds of grain and

10 packages of dates to Ala Verdy Khan of Bashkurd; this is collected by the local governor, Futteh Khan, who is deputed in these parts. The Futteh Khan, Bashkurd governor, Futteh Khan, is a Tokhee Ghiljee, son of Mahommed Khan, and some connection of Shahbudeen Khan Ghiljee of Candahar.

The fort of Punoch is very small and insignificant. Punoch has to the east Sashar, and a hill of specimen No. 8 to the west, and Bamishk to the north; the east of Oodeean and west of Bazman, and to the south Bint and Dehan.

From Punoch to Bampooor is a four days' journey to Gik, six days to Road. port Golak, and five days a very difficult road.

Futteh Khan Tokhe, in the time of Futteh Aly Shah, was governor of Narmasher, part of which district he held in jageer, as did his father before him, who had been brought with other Ghiljees from his native country as hostages by Nadir Shah. Mahommed Shah, however, on the plea of his no longer requiring Afghan hostages, ordered him to vacate Bamean, and retire beyond the Persian frontier. This he did not do until besieged in the fort, which before he sometime gallantly defended; at last being obliged to evacuate, he retired to Seisthan and resided there for a year; after which he paid a visit and offered his services to his former friend, Ala Verdy Khan of Bushkurd, who promised him the government of Punoch, provided he could conquer it from the Baloochees. He went, conquered, and now enjoys it. At the time I was at Punoch, the English Government was in possession of the Island of Kharag, and Futteh Khan by letter offered his services to the resident at Bushire, and I took the liberty of forwarding the letter, and procuring the answer.

Futteh Khan has great influence in Kirman, being great ally of the influence in Kirman. Beglarbezee Aghar Khan, who is a son of Khalee-bella Shah, the head of a large religious sect, of which the Mergats of Cabool compose one division; this Aghar Shah being also one of the malcontents of Persia, as it now is. Futteh Khan has a body of 500 of his own tribe around him.

I remained 10 days at Punoch, and on the eleventh (10th April,) started in company with the 8 Hajees, with whom I had parted at Bampooor, and whom I again met at Punoch, and returned towards otarabad until I came on to the Kami Seereech, where I spent the

night. I travelled in this kour for 3 stages, sometimes due South, at Seereech. other times S. S. W., over a very difficult rivulet bed winding between hills. On the fifth day, emerging from the kour arrived at the port of Seereech, at which were a few huts of poor fisher-men, who brought us some boiled fish.

16th April.—Leaving Seereech proceeded over a level road, the Gubreg. ground abounding with salt, to Gubreg, in a due west direction; here I spent the night in the khel of Meer Abdulla. It coming on to rain, he insisted on my halving the one-roomed cabin with himself and wife. One of my companions seeing the lady undress before us all without the least punctilio, uttered some abuse in Pushto of Balooch customs, which remark Meer Abdulla requested me to interpret, which I did, by saying, my companion was merely praising the unaffected hospitality of the Baloochees.

17th April.—Travelled over a level road due west to Jeegen, which Jeegen. belonged to Meerza Aly, son of Meer Hajee of Jusk, who entertained us with butter, curds and dates.

18th April.—Reached over a fine level road in a S. W. direction 8 kos, and turning a promontory, turned in a N. W. direction, and towards evening arrived near Jusk, and put up in the huts of a few fishermen.

19th April.—Two kos further brought us to Jusk, where we took up our lodgings in the mosque.

Jusk is bounded on the East by the river Seereech, beyond which Boundaries. is the district of Gik; on the West by Seerek; on the North by the Bashkurd mountains 4 kos distant; on the South by the sea.

The following are the sea-port towns dependent on Jusk; Seereech, Port Towns and Zabrey, and Jeegen. The districts are Bahmadee-zer-i-District. koh, Koh-i-Mubarak, and Barezok Myan Khisht.

The cultivation of Jusk depends on the rain; it consists of wheat, Cultivation. barley, millet, juwaree and cotton. The country belongs to Sazad Saeed, Imam of Muscat, whose resident deputy is Meer Hajee, by tribe a Kooasee, or descendant of Kar Kaoosee.

The revenue may amount to 500 tomans, equal to 3000 Fransa Revenue. rials, of which the Imaum receives 300 tomans, and when there is rain, a tax is levied of $\frac{1}{4}$ th of the produce, and may

amount to 6000 Jusk maunds, none of which reaches the Imaum. Meer Hajee has nine sons, the eldest of whom is Meer Hussein, who governs Seereek.

The principal men of Jusk are Meer Abdulla, Lashharee, Shah Principal Men. Aly, Murad Aly of the tribes of Singala and Hot, who could collect for Meer Hajee 1,000 men.

The height of the outer walls of the fort is four guz, and is of an oblong shape, being 120 paces long and 80 broad. The height of the inner walls is 10 guz; within the fort are 8 very small dismounted guns. The gate looks towards the north, and the fort contains six wells.

The proceeds of the port of Jusk are appropriated by Sumael Bijad, who is the Imaum's Jamadar of Baloochees. Its farm amounts to 100 rials.

From Jusk to Angaran, the capital of Bashkurd, is a six days' journey over a difficult road. To Manab 56 kos, to Muscat 2 days by sea, to Choubar 3 days by sea, and 10 by land.

The following posts are embedded in Jusk; viz. Astakhari Kumaraao, Horak and Seereek.

The animals found at Jusk, are cattle and sheep, goats, camels, deer, horses, hogs, and jackalls.

There are no fruits; a few dates have been lately introduced, as well as one or two cocoanut trees.

The productions of Jusk are, besides wheat and ghee, wool and fish, which with sheep are exported to Muscat. The following duties are levied at the port—

On every kupah or mat package 1 Mahummodee; on every dabber Duties. of ghee 5 Mahummodies or $\frac{1}{4}$ rial; on every slave 1 rial. On every package or jalut of dates half a Mahummodee; on every ass from Muscat 4 Mahummodees.

There are no traders or measures. The coins current are rials, Currency. karanees and Seetaramee ducats, and Mahummodees. The Weigh. maund contains 24 kyies, each kyies weighing 18 Co's. Rs., and the maund equals $1\frac{1}{4}$ Muscat maund.

Vessels to Muscat and return throughout the year. Freight is at the Freight. rate of one Mahummodee per passenger, and 3 Mahummodees the candy.

I spent eight days at Jak with Meer Hajee, who during the whole time importuned me for love-charms and specifics. The Hajees proceeded on their way to Baghdad, and the next day on some other Hajees returning from the same place, I joined them, and started for Gik, having refused the offer of Meer Hajee to enter his service, and having excused myself from prosecuting my journey towards Baghdad, on the plea, that it was too late in the season, and that I had heard that the Persian Gulf was very unsafe, from the number of British vessels cruizing there.

28th April.—Proceeded in an Easterly direction 2 kos to Gik, and 8 Shah-i-non. kos further to Shah-i-non over a plain, half way reached a hot spring, in the neighborhood of which sulphur is situated; but it was found not worth working by a miner, that Sazad Saeed had sent to examine it. There is a shorter hilly road from Jusk to Shah-i-non, but without water at the latter place. We were treated to curds and dates, and asked to pray for rain.

29th April.—Proceeded 8 kos to Jignee over a level, road plain. Jignee, where wood and grass are plentiful. At this place, a rivulet from Bashkurd discharges itself into the sea, where it is called Kam Bashkurd.

30th April.—At 8 kos arrived at Gobreg over a good level road in Gobreg, an easterly direction, where there are plenty of date-trees and scattered huts. Here we were presented with a bed, the tithe of the flock, and the good woman of the house got up before dawn, and cooked a fowl for the next stage for us.

1st May.—Proceeded 5 kos over a level road in an Easterly direction to the confines of Gobreg, where we stopt at a pool, and then continuing our journey, arrived towards the afternoon at Hulk-i-Khana; Hulk-i-Khana. a collection of mat huts under date-trees. This was the Hulk or village in which Meer Abdulla, my former acquaintance lived, and he received me with the same hospitality as on the former occasion. Just as it was getting night, the wife of my host awoke me, having a bottle of warm water in her hand, and reminded me, that it was time to perform my ablutions and say my morning prayers. I was not long allowed to remain astonished at this mark of attention; as the lady taking me on one side, and remarking that I seemed a discreet and modest young man, requested me to prescribe something

nourishing for her lord and master, who was becoming old at a much faster rate than she at all affected, or was pleased with. I gave her a few roots of *salab misree*, at which she uttered a thousand thanks.

2d May.—Proceeded 5 kos over a level road without water, the ground indicating the presence of salt, to the rivulet or kour of See-Sorag-reech, leaving which, and after another 3 kos arrived at Sorag, and put up in a fisherman's hut.

3rd May.—Proceeded 8 kos over a good level road, and passing here and there date and bar trees, arrived at the hulk of Dilshád, Dilshád, where a lamb was killed for us, and the head served up for us in the morning, but without eyes. From which I strongly suspect ed, that had the animal not being blind, we should have had to feed on curds and dates.

4th May.—Proceeded 8 kos over a road generally level without Kunaro. water to Kunaro, belonging to Sultan Shah, of the chief division or *sarsukar* of the tribe of Hot. There is a better road immediately along the sea coast. At the stage, there are about 15 mat-huts, and grass and fire-wood in plenty.

5th May.—Proceeded 6 kos over a level road to Kaiwan, and put Kaiwan. up in the house of one Khaladad, where we also had a lamb given us. I mention these presents to show the hospitality of the people of the Dasht, by which name the low coast is designated.

6th May.—Proceeded 8 kos to a collection of huts of Dashtees, still in the district of Kurwán.

7th May.—At 8 kos arrived at the confines of Karwán, and put Stage. up in the *khel* of one Dost Mahommed, by tribe a Singala of the principal division. To the East of this place is the plain of Keer and Beer; to the West Jusk; to the North Bint and Dehan; and to the South the sea-coast and port of Kolah.

From Jusk to Karwán is a level road, not however well defined, and requiring a guide over the Dasht; the inhabitants of which are called Dashtees. The cultivation, which is chiefly wheat, depends on the rain. The people are, as I said before, very hospitable, and the general direction of the road is Easterly. The inhabitants insisted on our praying for rain, notwithstanding the day before they had a shower accompanied with lightning, which had killed

a young man and his bullock, who had taken refuge beneath a tree.

8th May.—Proceeded 8 kos to Kourandap, or junction of rivulets, Kourandap. over a road partly in a rivulet. I stopped in a bed of the rivulet that comes from Bint, Dehan and Punoch; found no habitations. From this, Bint and Dehan are 10 kos distant, the governor of which former place is Meer Ahmed, deputed on the part of the governor of Gik, who has the supervision also of the Dasht ports. The direction of this day's road was sometimes due North, and sometimes N. N. E.

9th May.—Travelled 8 kos over a difficult road to Chokan, a place Chokan. with twenty huts among date trees, and supplied with running water.

10th May.—After 10 kos march in an Easterly direction arrived at Muht. Muht over a difficult hilly road, containing thirty huts. In the neighbouring hills flint glass, specimen No. 4, is procured. As I was about going to sleep, news arrived that Mahomed Aly Khan of Bampooor, had made a descent on Sashar, killing, wounding, and taking prisoners 150 of the inhabitants, 50 of whom he sacrificed to his father's manes. The chief of Sashar, Gholam Shah, and the inhabitants of Ispoka, having fled to Gik.

11th May.—Discovered on waking, that I had been spoiled and put off my guard, by the honesty of the Dashters; for my ass had been, through my carelessness, stolen during the night. Hiring another one to Gik, for I Mahummodee, arrived after an 8 kos march at Gik, and put up as usual in the mosque, the *akhund* of which proved to be a Saiyed formerly of Candahar, who received me kindly and entertained me.

12th May.—Went this day to complain of the theft of my ass to Chief. the chief, Surfraz Khan, whom I found quite a youth, and offered me a safe place to put my goods in, and explained that his uncle had gone towards Chanbár on a foray, and no doubt would bring some asses back with him, one of which I should have in lieu of my lost one. On sending for my baggage, a crowd collected round the English sword and iron scabbard, which I brought away with me on the night of my escape from the Rodbáree, and many questions were asked, what right I, as a Hajee, had to such an article. On explaining, that I was once a soldier, they mentioned that an English gentle-

in many years back had been at Gik, in whose possession they first saw an iron scabbard.

Gik is bounded on the East by Heet; on the West by Bint and De-han ; on the North by hills beyond which is Sushar ; and on the South by the plain of Keer and Beer.

The following villages are included in the district and government of Dependencies. Gik: Bint, Dehan, Heechan, Muht, and Kowhoorakon ; and the posts dependent are Seereech, Rapsh, Gleek, Tong, Goordeom, Azur, Para, Tes, post of Chanbar, (properly Chhabar.)

The land of Gik is confined, the water is plentiful, and the inhabitants numerous.

The regent as it were of Gik, during Surfraz Khan's minority is chief. Deen Mahomed ; his uncle Mehrab Khan, the former's elder brother and governor of Gik, was killed in action by Mehrab Khan Lung of Bampooor. The tribe of the chief is Bubdai.

The province of Gik, under an efficient government, might furnish a revenue of 1,000 ducats, 4,000 maunds of grain, and 1,000 packages of dates.

The principal men of Gik are Jangeer-i-Malak, Gohrami Meerza, Principal Men. Wukul-i-Pahlivan, Meer Jangeer-i-Murak, Meer Zaly, Enemies.

Shah Habeeb, Meer Shahee, Murad Mahomed, Dost Mahomed, Shah Abdulla, who are all Buledars, secretly inimical to the interest of the present chief. And the following are friendly: Shah Deen Mahomed, Meer Aludad, Meer Ahmed of Bint, Yar Mahomed of Dehan, Meer Jehangeer Buleda, Meer Dost Mahomed Singala, Dil Murad Singala, Meer Khulak-odd Singala, Shahbaz Singala, Sultan Shah Hot, Jamah Hot, Rais

Meer Burhan of Hijbar. Besides the following, on account of their feuds with the chief of Bampooor, Ghulam Shah Insharee, Futteh Khan Ghiljie of Punoch. On the other hand, the friends of the Bampooor chief are enemies, such as Ibrahim Khan of Pahra, Husen Khan of Aptar, Mahomed Shah of Sib, and Ghulam Rasool Afshanee.

The government of Deen Mahomed is unpopular, and the Ajol once went to Muskat to complain of the extortions they were suffering under, and invited Suzad Saeed to invade their country.

The following is the amount of the different posts and farms:—

<i>Posts.</i>	<i>Chiefs.</i>	<i>Farms.</i>
Sureech,	Dil Murad Singala,	14 ducats.
Rapsh,	Jamak Hot,	55 ditto.
Galak,	.. .. ..	35 ditto.
Tang, ..	Shah Bey Singala,	nothing.
Goordeem,	.. .. ..	40 ducats.
Puzm,	.. .. ..	20 ditto.
Para, ..	.. .. ..	8 ditto.
Tes, ..	.. .. ..	15 ditto.
Chanbar, (part of)	.. .. ..	40 ditto.

The Dashtees formerly paid to Mehrab Khan Bubdai 70 camels as *salamees* or present, besides their regular revenue from their dry lands.

The following is the revenue derived from the Dasht:—

Karwan.	.. .. ..	40 ducats	Seetaramee.
Bolak,	.. .. ..	40	ditto.
Sorak,	.. .. ..	40	ditto.
Fishermen of Rasph,	.. .. ..	40	ditto.
Bint and Dehan,	.. .. ..	40	ditto.

The circumference of the walls of Gik is 1,400 paces, the walls are dilapidated in many parts, and in others 10 guz. The Meeree walls are 40 guz high, and 200 paces in circumference, it is "bamman," or partly filled inside. In the citadel is a well of great depth. There is one gate to the Meerae and one to the Passel.

From Gik to Bampooir is a 6 days' journey, 4 of which to Peep is not Roads. a gun road. To port Tang via Keer and Beer, 4 days over a very difficult road. To port Choubar, 6 days, about 50 kos via Kouran, Kuroch, and Lag Dan-Dan, over a difficult road. There is a better road, however, via Jalaee, Kalag, Nakencha, Daroodar, Chai Basa, Nisheemun, Peer Garee, and Sorkum, between which two latter places the road is somewhat difficult. From the latter takes over a plain thence to Chanbar over a hilly road. From Gik to Bamishk 8 days, to Bahua 3 days.

There are mangoes in Gik, and mulberries in Heechán; besides grapes, figs, peaches and apples are in small quantities. The

ing productions of Gik, are wheat, barley, ghee, wool and beans; produce. and those of the autumn, juwaree, rice, dates and cotton, all which are consumed in the district, except ghee and wool, which are exported to the port of Choubar.

There are 4 shoe-makers, 100 cotton weavers, 8 blacksmiths, 4 carpenters, pinters, and 2 Hindoo traders, the prosperity of Gik having considerably decreased under the present governor, Deen Mahommed, from what it was under Mehrab Khan and Mohammed Khan Beledais.

The following articles of merchandise are yearly consumed in Gik:— Kandakee 1,000 pieces, mashroo 10 pieces, iron 3 candies, powder consumption. and lead 1 candy, and salt fish 200 camel loads. The hire. price of conveying which to or from the port is 4 Rs. the camel. Currency. The following coins are current, Seetaramee ducats, rials, Weight. França and Mahomedees. One maund equals our Company's seer.

Agents' charges are half the profits, and sometimes six annas in the rupee.

At Gik I turned physician, where I spent 8 days during this time. Return from foray. Deen Mahommed returned empty handed from Choubar, but bringing prisoners as slaves and 40 ducats from Jes, as usual in Balochistan. We had not conversed long, before he asked for love charms. My indulging his fancy in this matter, and putting a little plaster on an old* sword round on his nephew's head, got me a substitute for my stolen ass, and I made preparations for starting. A fortnight before my arrival at Gik, a Persian calling Aly Shah. himself Aly Shah arrived with my ass, and one pair of saddle bags, and tried to persuade my friend, Saiyud Mahommed of Gik, most to accompany him on a tour of speculation, through Scinde, where he expected to reap a good harvest.

22nd May.—Left Gik, and proceeded over a generally level stony road 12 kos to Bug, having now and then to cross a rivulet.

The first 6 kos was in a N. E. and a E. N. E. direction, and the remaining 6 are a S. E. and E. S. E. direction.

* Sic in MS. ? Sore?—Eds.

The chief of the place is Meer Murad, who lives in a small fort of no importance, surrounded by date trees. Its revenue may amount to 20,000 maunds of grain and 1000 packages of dates.

23d May.—Proceeded 2 kos to the fort of Heet, which belongs to Ghulam Rusool Afshanee, who has lately thrown off his allegiance to Kasarkund.

And thence to Kasarkund the road is a good level one, in an Easterly direction 4 kos.

This district has to the East, Purod Sangundaz ; to the West, Heet and Bug ; to the North, Koh-i-tolad ; to the South, Bahua and Doshtyacee.

The cultivation here is confined ; it consists of barley, wheat, beans, peas, and rice in great quantity, which is reaped three times a year. The irrigation is plentiful.

The chief is Shah Deen Mahammed, son of Shah Abdulla Beleda of the Mulookzur division, who has not more than 50 regular retainers although he might collect 2,000 men.

The revenue in ready money amounts to 40 ducats, and that in kind to 2,000 maunds of rice, and 1,500 packages of dates.

The principal men next to the chief's brothers, Shah Dost Mahomed, Shah Ahmed, and his son Shah Abdulla, are Kador-Men. dad, Sher Mahomed Mulla Ibrahim, Sahib Kadeen, Meer Azeez and Dewan Hukeem. The following are the chief's cousins and Enemies. his enemies, Shah Kumal, Shah Tanzai and Shah Mahomed Murad, who is now in voluntary exile. Indeed the government of the present chief is popular with few.

The height of the fort walls is 10 guz, and thickness one-half guz. Fort. and the circumference 800 paces, being "baman;" it is of mud and of great antiquity. The *muree* is 200 paces in circumference, having walls 20 guz high. There is a well in the fort. The citadel gate is towards the west.

From Kasurkund to Bampooor is a 6 days' journey, the road is Roads. hear as follows: To Champ in a rivulet bed over a stony road, thence sandy soil, difficult for guns; from Kasarkand to Bukwa 3 days through a rivulet via Dashtzaree ; the former place belongs to Gool-

Mohammed Jathgal, and the latter to Meer Abdee Jathgal; to Chabur 5 days.

Among the fruits, mangoes are plentiful; there are besides lemons, limes, figs, pomegranates and peaches in small quantities.

On arriving at Kasarkund, I put up in the same mangoe garden that the inhabitants said Captain Grant had encamped in, in 1810; it is situated to the West of the fort, and contains besides mangoes, limes and lemons. I staid 8 days at Kasarkund.

1st June.—Leaving Kasarkund returned to Bug, which has been described before.

2d June.—Leaving Pong, proceeded in a S.W. direction in a rivulet stages. bed 8 kos, to a few tents of Baloochees, where I sold my ass for 2 ducats, and hired another for 1 ducat to convey me as far as Chabar, stipulating that I was to be taken there after 2 nights on the road. As no supplies were to be got, I purchased a sheep and some dates for the journey, and starting in the evening, arrived in the Peeri Garee. morning at Peeri Garee, a pool of water; the direction of the road varying from S.S.W. to S.W.b.E. (?) the road not being a gun one.

4th June.—Started in the evening on account of the great heat of the day, and proceeded till midnight over a stony bed of a rivulet, when we emerged into a mountain skirt, and towards morning, arrived at Sarkum at a few huts of Baloochees.

5th June.—After spending the morning at Sarkum, started and arrived at the bunder of Puzm, where I got a boat to convey me to Chabar for 1 Mahomedee, where I arrived.

6th June.—Got on board a *boojee*, or boat, and spending a night at sea, arrived next day at Muscat, my object for visiting which place was two-fold.

1st. To get Futteh Khan's letter on its way to the resident at Aboobahr. 2d. To improve the state of my funds. And here let me pity the man fated to risk his life or property to a Mukran *boojee*; they are laden to the very utmost, and have invariably bulwarks of matting and bamboo.

The largest of them is 10 candies burden; the best are built at Matra near Muscat; the common sort at the chief ports of the Mukran coast, such as Gwadar and Chabar. The planks of which the boats are

made, and indeed the whole materials, are brought from Bombay. Some of these vessels go as far as Abooshahr, Busra, Bombay, and the Malabar Coast. The pilots and seamen are Mukranees, who most of them speak Arabic, Scindhy, and Hindustanee, besides their own Mukranee dialect.

Most of the *boojees* I have seen, are carefully provided with good life-preservers.

Two days after arriving at Muscat, I waited on Khaja Reuben, and delivered Futteh Khan's letter for transmission to the resident at Khaja Reuben. Bushire, at the same time requesting him to assist me in cashing a hoondie I had with me on Gwadar; this he told me, he should find a difficulty in doing. I returned home, and fed on nothing that night but grief, notwithstanding Khaja Reuben had read my passport.

10th June.—After selling an old carpet, I called on my friend Mullah Boigan. Mulla Boigan Baloch, son of Mulla Hajee, who was astonished to see me in the plight I was in. On explaining my circumstances to him, he immediately offered me the loan of 40 Franga rials, to be remitted to him on my arrival at Gwadar; and Mulla Mulla Yoosoof. Yoosoof Affghan, of Tughgan, insisted on my living with him during my stay at Muscat, which lasted 6 days, during which time I purchased some medicines to help me through the remainder of my journey.

15th June.—Leaving Muscat* after being, on the first attempt which I made the night before, driven back by contrary wind, and spending Gwadar. one night at sea, arrived next evening at Gwadar, and despatched besides the 40 rials I owed Mullah Boigan, 100 more for the purchase of pearls, and I remained two days at Gwadar; and hiring a boat arrived,

18th June.—At Chabar, having been a night at sea, and put up in Chabar. the mosque within the fort, where I gave myself out as a Hajee just returned from the pilgrimage via Muscat.

Port Chabar has to the East Bahua and Doshtzoree; to the West Boundaries. the sea; to the South the sea; and to the North the district of Kasarkund.

* This passage is conjectural; owing to very defective MS.—EDS.

The port belongs to the Imaum of Muscat, who realizes from 120 tomans, each toman being equal to 9 França rials. By a farm granted to Usmán Jatgál of this, Meer Aldee, chief of the Jatgorees, receives 530 rials for protecting the port from inroads in the interior. The chief of Gik also receives 40 ducats, the amount by some ancient hereditary right. The inhabitants are fishermen and see Khajas, which latter are traders.

The fort of Chabar is 140 paces in circumference, having walls 10 feet high, in very bad repair, and the fort crumbling.

Chabar has to the north a hill which abounds in talc, (specimen No. 1) and in which is found wild indigo.

From Chabar to Kech is a 10 days' journey over a well-inhabited and good road. To Tump 8 days, to Bawa 3 days, to Dashtgaree 1 day.

The productions of Chabar are fish roes (potas) procured in June and July, from the Ker fish; fish fins procured from the pishik ; both of these articles are exported to Bombay.

Chabar is the sea-port town of Bampooor, Gik and Kasarkund.

There are 3 dyers, 3 goldsmiths, 2 confectioners, 1 shoemaker, and 1 locksmith.

The farmer of the port, Usman Jatgal, is the principal trader, and next to him, Wareeyun Lotega, who trades with a capital of 10,000 rials.

The following are the estimated imports of Chabar: iron 20 candies, lead and powder 10 candies, Kandakee cloth 2,000 pieces, Kashroo 100 pieces, turmeric 20 candies, pedlery 500 rials, silk nosee 100 pieces, —————,* and muslins 1,000 rupees, Manzarone 50,000 maras or packages. Dates from Batana 20,000 packages which are consumed by the Jatgals of Butwa and Dashtgoree. rice of the red Sindh kind, called koilasee, 50 candies, in years of earth.

The maund of Chabar equals 10 Company's seers, which is the weight. Mussulman weight. The Hindoo or Bakal maund being at half.

* Illegible in MS.—Eds.

The price of a passage for a single individual to Muscat is 2 Ma. Freight. hommadees, and the freight of a candy 2 Mahommadees; a passenger to Bombay or candy of goods, pays 1 kuroosh of rials. Kuser are not now exported to Bombay as they were formerly when they had cost 3 or 4 ducats each.

The customs of Chabar may amount to 2,000 kuroosh. The import Duties. duty on Hindoos is 4 per cent., and on Mussulmen 3 per cent. The duties levied on goods from the interior are farmed for 150 rials, which is paid to Meer Abdee. From the fish maws and fins the Government exact 10, and the right offishing is farmed for 45 rials.

The duties on matting is also farmed for 15 rials. At the port Salt Tax. of Pava, there are salt pans; duty (?) is levied on every boat according to the following scale:—

Chabar boat, 3 Mahommadees.

Gwadar ditto, $\frac{1}{2}$ Rail.

Arab ditto, 2 and 3 rials.

The coins current are Mahommadee rials and Seetaramee ducats in the following proportions:—

10 Mahommadees (sufed) in one silver rial.

23 ditto ditto in one ducat. $\frac{5}{64}$

The copper currency is that of Bombay. I remained 10 days at Chabar.

29th June.—Left Chabar, and proceeded 8 kos at first over a sandy Tezcopau. soil, then over a descent, then to Kuchon and Mashek, where there is a well, and arrived at Tezcopan; the direction of the road being N.E. and E.N.E.; the whole road is a gun one, and the only difficulty is at the descent.

30th June.—Proceeded 8 kos immediately along the sea-coast over Nigwar. a good road, having water on it, which is not used for cultivation, except the water of a well at Shahans-i-Nigwar.

There heard of a gentleman who had ascended the neighbouring Captain Grant. hill some years back, and discovered a silver mine, which he concealed from the inhabitants. Leaving the sea coast, I branched inward in a N.N.E. direction to a few huts of Jatgals.

1st July.—Travelled over a level road in a S. E. direction for 5 kos to Gwatar. Gwatar; no water on the road for the last kos; the road turns to the E.S.E.

Gwatar is situated between the port of Chabar on the West, and the boundaries. port of Gwatar on the East; and has the district of Akwa on the North; the chiefs of which are Meer Gul Mahomed and Sushkaran Jatgal. The cultivation, which depends on the rain, consists of cotton, millet, juwaree, mash and peas.

The amounts of revenue in ready money is 10,000 Mahommadees; bat in kind at the rate of 1-10th, depends on the rain.

The fort belongs to Meer Sushkaran. The proceeds of the port mount to 130 rials.

Two Mahommadees the package is levied on mash of peas exported Freight and Duties. to Muscat, 2 rupees on every slave from Muscat, and 1 rial on a dubber of ghee exported to it, the freight of a candy to which place is 4 Mahommadees, and of a dubber of ghee 2 Mahommadees.*

There is only one shop here, every thing being brought from Chabar. The fishermen pay 1-10th of the proceeds of their fisheries. The produce of the place is fish maws and fins.

2nd July.—Proceeded 10 kos to the port of Jeewaree, over a good level road without water, passing on the road the Darahoon hill and the Nihong kour, or "whole river;" the direction of this road varies from E. to E.N.E.

The port is a small one, having only 15 huts of people, who style themselves Shahzádahs or Princes, situated between port Swatar on the West and port Gwadar on the East, and having to the North the district of Dasht.

The principal person at the port is Mahomed. The land is extensive, but the water as well as inhabitants are scarce.

This port was one of the principal on the Mukran Coast, but was desolated in favor of Gwadar, owing to the tyranny and extortions of the governor of Kesh. Its situation is much preferable to that of Gwadar.

3rd July.—Proceeded 9 kos in an Easterly direction to the port of Peesheekan. Gwadar over a level road, passing the Kour-i-Peesheekan, and several huts of Baloochees. Sometime back on this river swelling, it brought down† — containing old coins, which was found by a

* Obscure passage, owing to defective MS.—Eds.

† Illegible in MS.—Eds.

Dashter.—* The rupees were $1\frac{1}{2}$ unedhûts (90 grains) in weight, and even of the currency of Shah Abbâs.

The port of Gwadar is bounded on the East by port Shamal; on Gwadar. the West by the Peesheekan hill; on the North by Nigwar, and on the South by a hill and the sea. This hill is a promontory or "sunt;" a bay is called "khar," and the even coast, "teab."

Gwadar has two bays East and West. Vessels from the last anchor in the West bay, and vice versa. 564

Nigwar is a small village, the cultivation of which depends on the rain. There are some date trees and a well.

The port of Gwadar belongs to the Imaum of Muscat, on whose part Chief. is a resident governor, by name Walee Mahommed, an Arab. The proceeds amount to 3,500 França rials, each rial value in Bombay 2 rupees and 2 annas.

The people of Gwadar are at present much discontented with the government, on account of Walee Mahommed charging both the Gwadar and Muscat duties on vessels going direct to Basrá, carrying carpets, grain bags, mats, packages, felts, mat bags, coarse woollens called shawls, and goats' hair; because the governor says, (these?) formerly went to Muscat. The two ports of Gwadar and Chabar formerly belonged half to the Grohkees and half to the Brahoees. The Brahoees' half was given in grant by Meer Nusseer Khan to the present Imaum's Imaum of Muscat. father, Saiyed Sultan, who took refuge at Kalat, during some convulsion of his own state. As the Brahoee state got weak and the Muscat one strong, the two former ports of Jeewaree and Pasanee were superseded by the new ones of Gwadar, Chabar, and the Gikkee; half of the latter port has also been confiscated by the Revenue. Imaum. The proceeds of last year were 4,100 rials, which exceeded the amount of the former by 1,400 rials. This increase arose from the increase in the quantity of wool exported to Bombay. The inhabitants of Gwadar are Mahdeezois and Migwarees.

The fort of Gwadar is 370 paces in circumference, and the height of Fort. the walls 5 and 6 yards; within the fort is a tower of masonry in height 30 guz and in circumference 40 paces, in which are a few small ship guns. Gwadar is subject to the foray of the people of

* Unintelligible in MS.—Eds.

and, on account of the quantity of powder and lead constantly lying at the port. The fort would always be plentifully supplied with ammunition ; there is no water in the fort, and were rocks dug, salt water only could be procured. The fort of Gwadar is moreover commandant Hill. manded from the Sunt hill, where there is plenty of water in a tank ; indeed this hill was formerly built on. There is also an inscription in Cufica.

From Gwadar to Kech is 6 days' journey, to Panjgoor 12 days, to Olwa 6 days, to Kaloch 10 kos.

There is a fruit at Gwadar, well known in Hindusthan or Khorasan, called *badam-i-surkh*, or the "red almond," which is eaten like a mangoe ; the shell being thrown away. This fruit is also known at Muscat. Dates and mangoes are brought in their fresh state from Kech.

The productions of Mukran are fish maws and fins, procurable at the port, which is the outlet of the districts of Kech, Punjgoor, Haran and Dezak.

The *ker* fish, from which the maws are procured, come in season at the setting of the Pleiades, and the fishermen know the spots which to cast their nets from the great noise made by these fish at this season under water. The best fish that is salted and dried for exportation is called *mushko*, which comes into season after the ——*. There is another fish called the *gor* that is much esteemed, and there is an enormous quantity of it.

This year ghee and wool were exported with great profit to Bombay, also maws and fins.

The bazar is composed of the following shops : 2 blacksmiths, 3 shoemakers, 10 weavers, 5 carpenters, 2 tailors, and 2 Hindoo confectioners.

The principal merchant is Meerza Bholliza, son of Moolla Kechee, who trades with a capital of 30 and 40 thousand rupees, and has agents throughout Mukran ; besides him there are 50 other small merchants, 30 Hindoos and 20 Musselmans, having capital from 10 thousand rupees.

* Sic in MS.—Edu.

The following are the estimated imports to Gwadar for consumption at Mukran, or at the port:—

Iron, 50 candies,	Pepper, 20 candies,
Powder, 3 ditto,	Pedlery, 5,000 rupees,
Turmeric, 30 ditto,	Mashroo, 100 pieces,
English cloth, 5,000 rupees,	Sugar, 100 goonees,
Bengal Soosees, 1,000 pieces,	Mangroee rice, 3,000 maras from Muscat and Kech; and in time of dearth, rice and juwaree from Sindh.
Kandakee, 1,000 pieces,	
Dates, 5,000 packages,	
Lead, 100 candies,	
Silk Thread, 60 seers,	

Merchandise from Bombay can be sold at 5 per cent. above the original cost at 6 months' credit. The trade of Gwadar is monopolized by the native merchants.

An import duty is levied at the port of 3 per cent. on a Musselman's merchandise, and 4 per cent. on that of a Hindoo. This distinction is prevalent throughout the Mahomedan countries west of the Indus.

The produce of the Gwadar fisheries is taxed from kind;—that of other fisheries or importation 3 per cent. On stocking for Mukran, a tax is levied on each load of 1 Mahommadee, or "zor." The ducat is called *surkh* or *surk*, "red."

Merchandise to Bombay is charged on each a duty of 1 kuroosh, or rial, per candy, and a passenger 1 rupee Company's, 5 Mahommadees.

The currency is in ducats, rials, Mahommadee and Company's rupees in the following proportion: 1 ducat 28 Mahommadees in copper.

One Company's rupee is 5 Mahommadees in copper. The weight of 1 Hindoo maund, or $\frac{1}{2}$ Musselman's maund, equals 5 Company's seers.

Wool met this year with a ready sale. An American ship touched here, and purchased 450 rials' worth of wool.

During my stay at Gwadar, some European sailors, 13 in number arrived in an open boat; they could not speak a word of any language but English, but from signs, and on referring to native charts, I made

that they had been wrecked off the island of Khallan, while pro-
ing with coals to Aden. They also gave me to understand, that
had been beating about the coast of Mukran for 6 days, being
id to land until their supply of food was exhausted, and that the
ple of the port had robbed them of a compass and quadrant before
arrival.

was five days with them in Gwadar, during which time our com-
unication was by signs, and I afforded them all the assistance in my
power, and at the end of five days, put them on board a boat and for-
warded them to Khaja Reuben at Muscat. They seemed very grateful
to my assistance, shaking me warmly by the hand all round.

They also gave me a paper containing their statement, which (?) was
written, afterwards forced from me, and given by the master (?) to
Americans. the Captain of the American ship who purchased the wool,
woad, and who tore it up, telling the people who had the paper, that
it reached its destination it would have been prejudicial to the gover-
nor of Gwadar. I procured the ship's name from a clergyman in the
town, who was a phrenologist, but have mislaid the slip of paper on
which it was written.

My attention to the sailors betrayed me as a servant of the British
Government, and I became anxious to depart.

11th July.—Proceeded by boats to Gwadar, and hiring a camel, tra-
velled 3 kos to a few huts under one Shah Kaiheera.

12th July.—Proceeded due north over a good road, but without
water 10 kos to a few huts of Jatgals, where I was obliged to content
myself with coarse food.

13th July.—Hired a camel for 4 rupees to take me to Kasarkund,
and proceeded during the night to the town of Gul-Mahammed Jat-
l, chief of Bukwa, who enquired whence I had come, and on being
told from the pilgrimage, he treated me with great respect, and made
me a coarse entertainment.

14th July.—Proceeded 8 kos over a level good road to——* where
I succeeded in purchasing some rice.

15th July.—Proceeded all night 10 kos over a bad hilly winding
road to Kasarkund.

* Unintelligible in MS.—Eds.

16th July.—Purchasing next day after my arrival mash and some flour, started in an easterly direction 10 kos over a level road to Oshaph, containing 10 huts.

17th July.—Proceeded 10 kos through a rivulet bed to Parad, there being water at one place on the road, and found the way free (?) from Dahee, Mazab, and Afshan robbers.

Parad has to the West Kasarkund ; to the East Ferozabad ; to the North Sarboz, and to the South Bukwa.

The following are the villages of Parad : Kosolokan, Duspulakan's Villages. Jameedar, Bafónán, Petan Sahabad, Radbán, Zyuruija. Gunjabad, Hel and Balahan. The land is confined, and cultivated with the Mukran grain.

The chief is Mulla Meean Buledoi, who has no dependents ; he derives a revenue of 30 ducats and 10,000 maunds of grain.

The principal men are, Meer Shahibi Káoeen, Meer Abdullah Rustam, Meer Omar Rájáee-i-Shahi, and Durra-i-Kerazai.

The rate at which the revenue is levied varies from $\frac{1}{3}$ to $\frac{1}{2}$ and $\frac{1}{4}$, and is so oppressive, that most of the cultivators have fled to Bukwa.

The friend of the chief is Shah Den Mahomed of Kasarkund, Friends and Enemies. and his enemies, Bareean and Meer Ameen, and Mahomed Shah of Sib.

The fort is very small and insignificant. Twenty years ago a Persian Fort. detachment levied 700 ducats from the place, by means Persians. of a gun they had with them.

A rivulet from Surbaz passes Parad. The distance to which place is 14 kos ; to Bampoor 6 days' journey in rivulets ; to Sib 5 days via Sarbaz and Afshan, Erifshan and Narkand. During my seven days' stay at Parad, I cured Mulla Meean of the rheumatism, in return for which he offered me land, a wife, and the village of Parad, if I would settle there.

25th July.—On starting to-day was presented with a matchlock, which I sold immediately for $1\frac{1}{2}$ ducat, preferring not to assume the character of a soldier on my journey. Selling his present before his eyes, so far from offending the old gentleman, was actually his own proposal. During my stay here, it was my fortune to attend Mulla Meean's daughter, who was really the prettiest girl I had seen in Mukran ; she was subject to fainting fits.

Travelled 4 kos to the east to Ferozabad, a place containing grapes, pomegranates and mangoes in some quantity. It has to the east the Jameeman's hills, and to the south the Rosk hills.

The chief of this place is Shah Deen Mahomed of Kasarkund, which is indeed his inheritance.

The revenue is as follows :—

Ready money, 10 ducats.

Gram, 20 candies at the rate of 10.

Dates, 30 ditto ditto.

The fort is on an eminence, the walls of which on one side are 30 guz, and on another 5 guz, the circumference is 300 paces.

26th July.—Proceeded due south over a level road in a rivulet 6 kos to Rosk, the chief of which place is Meer Jan Mahomed. It is very fertile and well peopled, having 200 huts. I brought a letter of introduction from Mullá Meeán, and was nearly being detained to prescribe for my present host, had I not excused myself as having no medicines. There is a small gun here, which is only used to tie horses to.

27th July.—Proceeded 4 kos to Boftan in a E.S.E. direction, in a rivulet bed with date trees.

The place is under a son of Meer Taj Mahomed, and is very scantily cultivated on account of the nature of the country, which is hilly. Again proceeded sometimes in an E. and sometimes in a E. S. E. direction, in a rivulet bed to Pesheen 5 kos, which is a well cultivated place, under Shah Dost of Dezak, by tribe a Shahzada.

The principal men are Sahib Kadeen, Bor Meer Zaly, Mulla Noor Principal Men. Mahomed, and Poor Dil Khan, Keenajee. The former chiefs of Pesheen collected revenue from Bukwa.

28th July.—Proceeded in an Easterly, E. S. E. and S. E. direction Mand. over a level road 8 kos to Mand, which is a fertile place, containing 2 villages, Ko-oo-kan and Sorag. To the north is the Kour Nahang, which rises in the Zamoran hills.

The principal man of the place is Ghulam Mahomed, by tribe a Rindh, who with the whole of his tribe are great thieves, and much dreaded in Mukran.

The principal men are Ghulam Mahomed, Abder-i-Gaz Kandee, Principal Men. Shah Maree i-Dakeeda, Shahdadi Abdoo, Slahoo

Kujai, Kasim Ferozai Murad, Mullazai, Keenajee Shahabzai, Omar-i-Yusof Dadurzai, Khuddledad Murad Sowatzai, Ameer Khudadad Paluchatee, Shahdad-i-Abdee, Kohlur See, Asadulla Buzdar Khudadad Askánee, Doten Surbinmee, Murad Meerazai, and Kumal Murakzai.

These men are very independent, and say, they are originally of Kochee.

From this to Sib is a five days' journey over a mountainous road, and to Gwadar 7 days over a gun road. The maund used here equals 12 Company's seers.

30th July.—Proceeded 8 kos, at four of which crossed the Nahang Kaw over a good level road to Tump, which has to the East, Kasarabad; to the West, Mand; to the North, Pulabad, and the Zameeran hills S. E.; the South, Dosht.

The following are the villages of Tump: Jolaejee, Soedgo, Malikabad Principal Villages. Kalat-i-Dezak, Nazarálod, Kokobád, Kourjo, Kulahoo, Peelabad, Gomazee, Malohal, Kansado, Hotjo, Kohrán, Bala, Cheechá and Sorafgan; most of the dry lands are towards Nigwar. The land of Tump is fertilized by springs and *karezes*.

The chief is Malik Danai, son of Meer Dost Mahomed Giehkee, Revenue. who has 100 dependents, and collects 250 ducats in ready money, 5000 maunds of grain, and 1000 packages of dates.

The principal men are Meer Razaee Hot, Meer Haibotun Hot, Principal Men. Meer Shahoo Hot, Sher Mahomed Nigwaree; these are friendly to the chief, while the following are enemies: Kamalan Hot, Meer Brahim Hot, Meer Yoosaf, Meer Ameer, Meer Afzal, and Meer Bijad Eesazais. These have retired to Peelabád, and pay no revenue. The *kotwal* of Tump is Kaim Khan.

The height of the fort walls is 8 guz and the circumference 800 paces; the height of the citadel 20 guz and the circumference 200 paces. The fort is situated on an eminence and has a small gun.

From Tump to Gwadar is 5 days' journey as follows: 1st stage Kar-makan, 2d Sunta, 3d Nigwar, 4th Dardar and 5th Gwadar, which is over a good level watered road.

To Sib 6 days, over a difficult monntainous road.

There are 100 weavers, 2 shoemakers, 3 blacksmiths and 5 Hindoo traders. Here I remained 4 days with Tetga, a Hindoo, during

hich time I was offered the appointment of manager to Dahlo penar.

4th August.—Crossing the rivulet, proceeded to Peelabad 2 kos in a Peelabad. northerly direction ; it is opposite Tump. The chief of the ace, which is a fertile one, is Shah Umar-i-Meer Tangai Gichkee. ere I was warned not to advance, as the plague was raging at each.

5th August.—Proceeded 8 kos over a level road. To the East Nasarabad, where I spent the night ; no one from Kech was lowed to enter here. This place has to the North the Zamaran hills. The villages are, Nakabad, Kolanee, Noudaz, Kohdee and Shakka-llages. han. The land is extensive, but the supply of water limited, hich might be increased by a bund across the rivulet, which falls to the sea between Gwadar and Jeewaree. Tobacco is plentifully llivated here, and is renowned throughout Mukran. The chief of e place is Meer Hosain, son of Meer Dost Mahommed, and brother Malik Deenar of Tump.

He has 200 dependents and collects a revenue of 15 ducats, which at the rate of 1 Mahomedee per every Davzadah, a Nakeeb (purchased slave.) The Baloochees pay no revenue in ready money. In nd, he collects 30 candies wheat, 8 candies cotton, juwaree 8 canes, and tobacco 10 in kind.

The principal men are, Omar-i-Eesa, Abdoo Meerzazai, Meer Aloo-i-Chiefs. Mura Deena, Kow Mahommed, and Dashen Panjahomlee of e tribe of Kosheedee. Meer Nasir Khan Brahee took this place ith a loss of 700 men, which he felt, to use his own words, as the loss of one horse shoe."

The fort is dilapidated ; and is 250 paces in circumference and 0 guz in height.

6th August.—Proceeded over a level road 10 kos to Kech in E.S.E. and S.E. direction, having a difficulty at one part a rivulet on the road. At intervals were to be seen bodies of men ho had died of the plague. As I advanced, my heart began radually to fail me, as these sights became more frequent and multiplied. Kech is bounded on the East by Lamee, and Gwashtang ; on the West by Nasarabad ; on the North by hills ; and has to the South the ost of Gwadar.

The villages of Shahors of Balochistan generally consist of not more than 20 huts and 1000 date trees. Those of Kech are the following: Joosak, Bug, Zorabad, Kalgaree, Soraph, Making, Komejes Iskarabad, Fakeerabad, Hujjatabad, Aleeabad, Surdasht, Turbal of Dahu Mazhab, Sooragee, Purkee, Humzaabad, Fuzilabad, Gwashtang, Kauhoor Kalat, Noken Kalat, Pooree Kalat, Gokdan, Shahkahan, Rosta, Chotoee-joe, Gazan and Bet.

The ground of Kech is limited in proportion to the inhabitants, in the waste lands the following are cultivated : barley, wheat, juwaree, cotton, rice, mash and peas.

Kech is governed by Meer Mehrab Khan of Kalat, through his Naib or deputy, Meer Fukeer Mahomed Beezanjad, son of Meer Keejara.

The revenue in ready money amounts to 12,000 Mahommedees, Revenue. 4,000 maunds grain, and 4,000 packages of dates, which is —* by the Gichkees under Shah Kosam and Meer Durra.

The principal men of Kech are, Meer Durra of Gwashtang, and Mulla Umur of Kauhoor Kalat.

The chiefs of tribes are Meer Khamalam Sungur, Meer Bahram Hot, Kamalan Dahee, Mazhab of Turbut, and Mulla Badradeen Mul-lazeji.

The principal men of Turbut, are, Rais Gamguzar, Rais Moosa, Mulla Reuben, Mulla Eesa, Mulla Noor Mahomed, Mulla Yusuf Yacoob, Mulla Durvesh, Meer Noor Mahomed, and Meerza Mahomed Dashee.

The governor of Kech always consults and acts in concert with Shah Kosam and Meer Durra, who have on several occasions —† the Kalat governor of Dasht and Bakwa ; both formerly paid revenue, they are both now independent.

The Shahghasee collected 10 camels from the Dashees, 200 ducats Shahghasee. from Tump, 100 ducats from Nasarabad as a fine, besides the revenue, and from Kech 400 ducats; none of which on his return to Kalat he gave Mehrab Khan credit for.

The boundary of Kech was formerly at a heap of stones, called "Cheedah i-Malik," near Kasarkund.

* Unintelligible in MS.—Eds.

† Sic in MS.—Eds.

Turbut paid no regular revenue to Kech formerly, but merely sent Turbut. a few slaves yearly direct to Kalat. The chief of this place was formerly Mulla Baieean, now at Muscat, who had resident parties, Badrodeen and Mulla Rahmat-i-Eesa. These were ejected by the inhabitants, who themselves chose Kamalan Dashtee, the present chief.

The revenue of 4 Mahommadees per loom is levied from every weaver, and the same from every shoemaker; besides often requiring their labour free.

Were Kech blessed with a just and active governor, revenue might be collected from Jo'oo, Nandrak, Jush and Jigeen.

The Shahghasee collected during his last visit to Mukran 1500 lucats, 70 camels and 4 slaves.

When Kech was governed by the Maliks and Shahzadahs, revenue was paid to it from Kichk and Mashkar.

Mahammed Shah of Sib is an enemy of the governor of Kech, while he Panjgoorees are allies.

An import duty is levied on every load, of 1 Mahommadee, and the resident Hindoos pay a yearly sum of 4 ducats.

The fort is 2,000 paces in circumference, and the citadel or muree Fort. 600 paces. The height of the outer wall is in places 10 guz high, and in other places there is a thoroughfare. The height of the citadel walls is from 40 to 50 guz long;* the other two are dismounted, and one of iron 3 guz long. Within the citadel, near the entrance to the left, is a well.

There are two gates, one to the citadel, and one to the fort towards the east, and another to the fort towards the south. This fort might be taken by driving a mine under the southern bastion of the citadel.

The fort is situated on common earth, in which rain forms small basins.

To the East of the fort are mat huts and a marsh (?) to the West, mud huts and date trees; to the North, mat huts and rising ground adapted for a battery; and to the South, a canal and tamarind trees and rice cultivation.

* Some omission here, evidently relating to the ordnance of the place.—Eds.

From Kech to Panjgoor is 6 days' journey for laden camels over a Roads. well-watered road, not very difficult, there being a gun road via Buleda, on which there is only one obstacle near Garuk, a narrow defile. To Kalat 15 days via Kolwa and Mashkai. To Gwadar 5 days over a level road for guns.

To Sib 7 days, over a difficult mountain road via Zameeran, Nar-huk, Kambee, Salag, Jakookan, Gwazan, Kahrai, Bot Wakaiee, and Ispe Kahan.

The Zameeran hills in which the above stages are, extend westward Hills. to Ofshan, Erifshan, Narkund, Sarboz, Bint, Bashohard and Meerab. In the time of Meer Naseer Khan Brahoee, Meer Shah Beg Gichkee went to complain to Timoor Shah Duranee, of the exactions of Historical Anecdote. the Brahoee chief, who was then encamped at Kech. Timoor Shah gave the complainant two bailiffs, with orders to cut the tent ropes of Nasseeer Khan immediately on their arrival, and make Nasseeer Khan's followers carry their baggage on their backs for the first stage out of Kech. Those instructions the bailiffs performed to the letter, allowing the stage however to be at Yoosok, in the immediate neighbourhood ; such was the authority of the first Duranee monarchs.

Contrary to what I heard at Panjgoor, I was here informed, that Meer Naseer Khan first gave half of the country to the Gichkees. I also heard, that the revenue of Kech once amounted to 25,000 ducats, including Mukran.

The animals of Kech are, camels, cattle, asses, sheep, goats, horses, Animals. buffaloes, and hogs without number, to prevent whose depredations, people armed with matchlocks watch their fields at night.

The birds are, bulbul, maina, shamk, turaj, and kobhs.

The fruits are mangoes, dates, grapes, mulberries, figs, peaches, limes Fruits. and lemons ; of these the mangoes and dates are plentiful and good. There are also some tamarind and jamun trees. The inhabitants build with the date stem, and hem it with the gaz and kauhoor.

The productions are ghee, wool, grain and beans ; the wheat is reaped at the vernal equinox, and the rice, dates, juwaree, cotton, and mangoes in July. These are consumed, with the exception of wool and ghee, which are exported to Gwadar, and cotton and tobacco and cloth manufactures to Panjgoor.

There are 1000 weavers who make shodong ashahar, soosee, lun-Bazar. gees, chadars, hustrong charuk; 40 shoemakers, 15 blacksmiths, and 12 carpenters. There are no large merchants at Kech itself. The principal reside at Turbat, and are, Painda, a Mussulman, and Hanjoo, a Hindoo, who each trade with a capital of 5000 rupees.

On account of the exactions of the Kalat governor, most of the traders reside at Turbat.

Were it not for the extortions of the government, great profit might be made at Kech. Several merchants have formerly enriched themselves here, of which one is now alive at Karaihar; and Edevell Khan, known by the name of Moolla Keely, who used to remit his money out of the country in sweetmeat jars, covering the ducats with syrup.

The following is the estimated consumption of Kech: madder 5 Consumption. candies, indigo 40 seers, chintz 1 load, silk 5 maunds, mashroo 40 pieces, daryai 20 pieces, English cloth 1 camel load, powder and lead 5 candies, kandakee 3 loads, pepper, &c. 5 candies, pedlery 500 rupees, saltfish 300 camel loads.

The hire of a camel from Gwadar is 10 Mahommadees. From Kalat 10 rupees.

The currency is in ducats and Mahommadees. The maund equals 10 Company's seers. Agents charge one half of the profits.

Turbat is capable of great improvement, there being several *karezes* out of order that might be advantageously repaired.

At Turbat are (sects?) of Baloochees, who have peculiar religious tenets differing from those of the Koran. They call themselves Mussulmans and "Zikarees." While other Mahomedans, they call "Nirnazee," or "Peagars." They are called by the other Mahomedans of Baloochistan, *Daee Mazhabi*, heresy believers. They are supposed to be disciples of Hosainoodeen, called Peer Roshan

Origin. by his own disciples, and Peer Tairuk by the Sunnee Mahomedans, who propagated a new creed in the time of Akbar Padshah with the greatest success in the district of Teerai, whence he was expelled by a popular commotion of the neighbouring Sunnee tribes, aided by the governor of Cabool, and sought refuge and disciples with success among the ignorant Baloochees of Mukran.

The *zikarees* themselves say, that their saint was originally from the river Attock, that he performed the pilgrimage, and on his return, according to divine promise, and before a number of unbelievers extracted from the heart of a tree he pointed out, a written volume of their religious code. This tree is still pointed out on a rock called "Koh-i-Nuwad" by them, to the south of Turbat; the tree they call "Bai-i-Kouhoor." They will never take a false oath by this tree, under which they perform their orgies. Their saint was buried within the water (?) of Turbat, until Meer Naseer Khan, in his zeal for the orthodox faith, had the grave broken open, and the mouldering bones burnt to ashes with horses' litter. They believe that Antichrist has come.

They are very particular in paying tythes, but never pray or perform the pilgrimage. Their belief runs thus:—

"There is no God but one, and Antichrist is the light of God."

Their devotional exercise is as follows:—

They assemble in a ring every night on a level spot without the village, and seat themselves and commence their zillar or repetition, gradually warming as they advance.

They do not fast with other Mahomedans in the month of Ruman, but fast 9 days of the month Zilhij. When they begin to get old and feel their death approaching, they go to their priest to seek for heaven, who sells it according to the riches of the applicant.

On every Monday evening they proceed to the "Koh-i-Murad," and have a repetition, (?)* and on a certain day of the year they drug themselves with intoxicating substances, and after dancing round the tree, their priest exclaims, "It is time to be gone to heaven," when they retire to promiscuous intercourse. The marriage of a couple is not considered fortunate, nor indeed lawful before the priest sanctifies the bride.

On my arrival at Kech the plague was raging at Turbat. I proceeded to the Maeree, the residence of Meer Fuqueer Mahomed Beozanjoo, and officiated as clerk† for 15 days, during which, crowds of people prayed that never prayed before. On making preparations for my departure, the Meer gave me letters of introduction on Kalwa; one for

* Sic in MS.—Eds.

† (Pesh numaz?)—Eds.

his uncle Husein Khan and the other for Meer Maudar of Kalwa. During this time, as the plague increased, to prevent accidents, I sent all my manuscripts to Hajee Haroon at Gwadar, directing him in case of my death, to forward them to the Honorable the Governor of Bombay.

22d August.—Left Kech and proceeded to Turbat, where I heard of Turbat, the arrival of the army at Shawl, and of Lieut. A. Burnes' visit to Kalat. Here I staid 5 days in the house of Rais Moosa. Before quitting the subject of Kech, I must not forget to mention the following national verse:—

Gib, Kasarkund and Bug,
Sarbaz with its garden and fruits,
Parad with its beautiful girls,
Are not worth one of the poplars of Kech.

28th August.—Left Turbat and proceeded 8 kos to Bazaph over a level road, supplied with water, in a S.S.E. direction.

29th August.—Proceeded 10 kos, having passed the joining of two Dadee roads, and the river Nelak to Dadee, situated on a rivulet with date trees and water in wells, and consisting of 4 huts of Baloochees, who had not escaped the influence of the plague, which generally carried off its victim within the 12 hours. I calculated that while the plague lasted, 1,500 people died of it. The natives in their ignorance, supposed the disease to arise from a worm in the liver, for which they administered large bowls of lime water and saltpetre, and used bathing in cold water in the open air; the weather being dreadfully hot.

I consider that women died more than men, and very young children in proportion.

There was one very strong man, a grave-digger by profession, who Grave-digger. went about joking during the plague, and defying it aloud. I saw him on the day of his last exhibition; the next day after a few hours vomiting, he required in turn the office to be performed for him that he often had so blithely performed for others. Having spent the day at Dadee, started in the evening and proceeded 8 kos, sometimes in a S.W. and others in a S.S.W. direction.

30th August.—Proceeded over a tolerable road without water 3 kos Talar. S.W. to Shereenjae, and thence S.E. 4 kos to Talar. The road from Kech to this is a gun road, but Talar itself has a narrow

defile between two hills, in which are three pools of water, the water of one of which alone is sweet. From this place two roads separate, one to the S.W. called Rah-is-Tung, the other to the left leads to Keelach.

31st August.—Proceeded 10 kos over a level road, rather stony, in a S.E. direction to Koh-i-Dada, which is very high, and may be seen from the port of Gwadar. There are plenty of deer in this mountain ; it was once the refuge of the inhabitants of the plains during an invasion ; and utensils are occasionally now sometimes found after a heavy fall of rain, by huntsmen.

1st September.—Proceeded over a level road through dry lands Keelach. in a S.E. direction to Keelach, and put up in the house of Mulla Mobarick, the chief. The place produces the finest riding camels in the whole of Baloochistan ; they are not a separate kind, but the most promising colt is picked from the herd, and trained. The inhabitants of this place are chiefly Daee Muhzab.

2nd September.—Proceeded all night in a S.E. direction to a rivulet.

3rd September.—After spending the day at the rivulet, started towards evening, and towards morning arrived at Pasanee, from which place to Kech is 4 days' journey for guns, the only difficulty being at Nigwar, but the best gun road to Kech is from Gwadar via Dasht and Nigwar, 6 days.

The port of Pasanee is a small one dependent on Kech, and governed by Mehrab Shahoo Kalmalee, whose deputy is Wulee Mahomed Gulshah. There are at present only a few huts of Baloochees and fishermen, who sell matting to the amount of 1,000 rupees a-year. The port is capable of great improvement.

4th September.—Leaving Pasanee, proceeded in a Easterly direction 5 kos on a level road to Gazdan, consisting of 12 huts of mat-makers.

5th September.—Proceeded 8 kos over a level road passing the Korokya. Koh-i-Kalmat, which is said to abound with sulphur, specimens of which I sent to Karokya ; after the hill, a rivulet. The place contains some Baloochees and 100 date trees.

6th September.—Proceeded 10 kos over a level road without water, Harmarah. except at Pinnee to Port Harmarah, which is bounded on

the East by the river Baseel and the Koh-i-Malar; on the West by Koh-i-Walmat; on the North by the hill of Talaj-lok and Kolwar; and on the South by a hill and the sea.

The water of the port is brackish. The chief of this place is Jan Ally, son of Meer Jan Khan Sasai of Beloo, who has a resident deputy, Meer Hak Jatgal. The revenue of the port may amount to 2,000 rupees Kashanee.

The Meerwaders are enemies of the governor, while the Jatgals are friends. Many families have a call (?) on refuge at Gwadar from the extortions and tyranny of the governor of Harmarah.

The productions are ghee, wool, fish maws, fins, and matting.

The principal merchant is Tojoo, son of Aloo Satza of Myanee, who trades with a capital of 3,000 rupees.

The freight of a candy of goods to Bombay or Muscat is 2 rupees, and a duty levied of $2\frac{1}{4}$ per cent.

On mentioning my intention of going to Soumyamee by land, the people said I would certainly be robbed on the way for the clothes on my back, as the Baloochees were nearly reduced to starvation from this year's drought. I therefore sent my property by servants to Myanee by sea, and myself prepared to visit Hingulach as a Hindoo fukeer.

7th September.—Left Harmarah at night, and proceeded over a level road for 3 kos to the North, then 8 to the N.E. and E., and then 4 kos to the East to a few huts of Baloochees; passing the rivulet of Asar to a place called Mutchpee. The inhabitants are mat-makers.

8th September.—Proceeded to a pool called Sariab 5 kos in a E. S. E. direction, having no water on the road, which is a difficult one to Khomi-karan when the weather was very hot; there is a shorter road over the hills of Malán.

Proceeded to Hingol 5 kos, a rivulet called by that name was a difficult winding road.

9th September.—Proceeded 4 kos to Hingolah, or the Hindoo shrine of Mata Hinglaj. It consists of a well, the water of which at times rises up with a bubbling noise, discoloured like that of a river fresh swollen from the rains, and carrying mud in suspen-

sion ; the Hindoo pilgrims, when this takes place, throw in suparee, cloves, cardamons, and cocoanuts. Should there be a delay in the rising, the pilgrims in the most abject manner call on "Mata" to give them a sight of herself, exhorting each other to reveal their sins and inwardly repent ; when the water rises, they *salam* with both hands joined and throw in their offerings, which after sometime on a second rise are brought back again, when they are collected and form ingredients of large cakes, which they bake near the spot. A large number of pilgrims come from Hindusthan.

In the Hingol rivulets is found *sonmakee*, (specimen No. 6.)

10th September.—Leaving Hinglach proceeded 11 kos to Chat-i-Singola, (*chat*, meaning a well) over a level road. At 7 kos passed a rivulet. Here I found a few tents of Baloochees.

11th September.—Proceeded 5 kos to Chah-i-Por in an easterly direction, where I found huts and one Hindoo trader.

12th September.—Proceeded 6 kos to the East, over a level road to Chah-i-Kourgh, (*kourqá*, meaning weavers.) Here I found 100 huts and 80 weavers.

13th September.—Proceeded in an Easterly direction 8 kos to Myanee, over a level road with spring water on it. The road to this from Harmarah would not do for a detachment, the water being scarce.

On arriving at Nizanee, heard that my servant had gone to Karachee ; getting on board a boat arrived next morning at Karachee, and put up in the Balice Sarai. During my stay of 6 days at Kurachee, Naoomal offered me his services.

20th September.—Proceeded 10 kos to Habb, where there is a rivulet of the same name with a good level road. The place is excellently adapted for a cantonment.

21st September.—Proceeded 14 kos, and encountered some thieves on the road ; some of whom I escaped by telling them I only preceded a Soumyanee. large cafla, and arrived in the morning at Soumyanee. The place has to the East Halb; to the West the sea; and to the South the sea. There is no cultivation, the ground being mounds of sand, and the water scanty and brackish. The population does not exceed 200. Every day fresh wells are dug.

The proceeds of the port amount to 1,12,000 Kashanee rupees. This Chief revenue is appropriated by the Jam of Bela, by tribe a Jatgal or Susai, who has a resident deputy, Sasih Jatgal. There was formerly a fort, of which nothing remains but a gateway. There are five dismounted guns of from 2 to 3 guz in length.

There is a road from this to Scinde via Shahhalawah, and the Seoon hill was strong and unsafe (?) and well watered ; to Khwan 8 stages.

There is another road via Kurra Pass, as follows :—

1st stage a plain ; 2d stage Dakkechá ; 3d stage a plain, with water passing the Kunara hill ; 4th stage Bubb ; 5th stage Habb, where there is a rivulet ; 6th Sindany, a plain ; 8th Tandak ; 9th Mandang ; 10th Boukan, and 11th Sehwan.

The following articles of merchandise are procurable at the port : wool, ghee, oil, fish maws, fins, sesamum, barley, wheat and juwaree ; the produce of the dry lands depending on the rain. The oil is exported to Muscat.

The wool and ghee are procurable after the usual equinox, and the oil and juwaree after the rains.

There are 2 Hindoo goldsmiths, 3 dyers, 15 oil-pressers and confec-Bazar. tions. Chief Mahomedan merchant, Aloo-Satqa, who has a capital of 100,000 rupees. Chief Hindoo merchant, Naroomal—15 Mahomedan traders, and 25 Hindoo traders.

The following are the estimated imports : iron 60 candies, lead 60 candies, and English cloth 50,000 rupees.

Silk is imported from Karachee.

Myám may be called the port of Khorasan. I estimated the trade of Nigany at 500,000 rupees.

The currency is in Kashanee rupees, ducats, and França rials.

The maund contains 40 Company's seers. There are 3 measures, the largest weighs 8 seers, another $5\frac{1}{2}$ seers, and the third $4\frac{1}{2}$ seers. At Karachee, Bombay goods find a ready sale at 25 per cent. above the prime cost.

Brokers take exchange of 1 per cent., from both buyer and seller. Interest on money is at the rate of 6 per cent. per annum.

A tax is levied on each horse of $4\frac{1}{2}$ rupees ; the freight to Bombay of a horse, was from 10 to 15 rupees.

On every keeput of goods $1\frac{1}{2}$ rupee is levied ; on a dubber of ghee $1\frac{1}{2}$ rupee ; on madder, and raisins 3 rupees per candy.

A customs duty of 3 per cent. is levied on all merchants' import, and on goods of strangers for the Khorasan markets ; and 15 rupees the *auda* of cloth which clears Beloo.

25th September.—Proceeded 7 kos, 2 of which was over salt ground, Charoon. 2 over sand, and 3 over a plain to Charoon ; a rain water pool without inhabitants, but a great number of gaz and hawk trees. This road was sometimes due North and sometimes N.EbE. In the evening again started, and proceeded over a level road to Sigoree, the Sigoree. precincts of which are cultivated by the rain. There is no water on the stage, sesamum is cultivated at this place, where there is a tank ; there are 40 shops, and provisions plentiful ; this road runs in a N.N.W. direction.

26th September.—Proceeded through artificial platforms of cul-Oobated. tivation (bát) 5 kos to Oobated ; a rain water tank. Thence 5 kos through báts, the road sometimes running N.W., sometimes Pamtee. N.N.W. to Pamtee, where there is a river, but no habitations.

27th September.—Proceeded over a level road 5 kos to Nul in a Nul. N.W. and N.N.W. direction ; still at the river, whence Beloo. taking a supply of water proceeded another 5 kos to Beloo, where I was questioned regarding the cantonments at Karachee.

Beloo has to the East the Chopore mountains, which are 10 kos distant ; to the West, the Lak or Pass of Jaoö ; to the North, Walapat. and to the South, Sigaree.

The following ports belong to Beloo : Saunyanee and Harmarah, and Villages. the following towns : Sujaree, Utl, and Tattaro. The villages of the district of Beloo : Arabhot, Deedo, Wázar, Ronjah, Moorah, Ankaree, Kinhrs, Acharah and Bodara.

The chief cultivation (all with the exception of that of Tatara) Cultivation. depends on the rain, it consists of juwaree, mash, peas, sesamum, rice, sugar cane and indigo. Water is not in proportion to the land and inhabitants.

The chief's title is Jam, and his tribe is called Jamot Sasai (of Sas) ; some say that originally this tribe was included in the Momborance Brahoees. He might collect 400 men, and derives a revenue of 30,000 rupees, which he has farmed out to a Hindoo, named Chándoo.

The principal men of the tribe are Changul, Ronjah, Umar, Godar, Lal Khan, Jamot Ahmud Singala, and Ajeera Bedro.

The chiefs of the Jam are Raheem Khan, son of Walee Mahommed Chief. Sherazee Mongal, Kareem Khan, Bizanjan Umar, Ronjah Joge, Peskar Braheem, son of Alla Rukhya Wakeel, and Hafiz Peshawaree Cazee.

The government of the Jam is very unpopular. He is on good terms Friends. with the Khan of Kalat, with Mahommed Khan and Kamal Khan Ellazais, and with Walee Mahommed Khan Mongul.

The fort is a small dilapidated one, 100 paces in circumference, and Fort. 4 guz high. There are several dismounted guns. The gate is towards the East. The fort stands on an earthy mound. The only Persian well I saw in Baloochistan, is here.

From Baloochistan to Sindh is 10 days' journey via Shah Bilanur.

A tax is levied here of one rupee the load, and four rupees per horse.

From this to Kech and Panjgoor is 15 days' journey, where water is scarce. The road to Panjgoor is not a gun road, that to Kech across the Jáoo Sak is not a gun one, but that over the Maghal Sak. The Jains once invaded Kech with guns via the Maghal Sak.

The animals are camels, cattle, buffaloes, sheep, goats, asses, horses and wild sheep.

The birds are turaj, parrots and mainas. There are sugar-cane, lemons, limes, plantains and jáms.

They build with the kauhoor wood, pece, and neemb, and burn the turmeric, kauhoor and kunar.

There are 4 shoemakers, 100 weavers, 20 dyers, 7 Hindoo consec-Bazars. tions, 8 goldsmiths, 1 coppersmith, and 50 shops of Hindoo traders. The principal merchant is Bolaram, agent of Pretram Doss of Shikarpoor, who trades to the extent of 200,000 rupees. The hire of a camel to Soumizanee is 3 rupees.

The maund equals the Company's maund. Copper pice are here struck, and the currency is in ducats and Kashanee rupees.

To the N.N.W. of Beloo 5 kos, there are excavations in the moun-Cave. tain, which place goes by the name of Saiful Molook. To the East of Beloo in the *chappar* is a copper mine, and antimony is found here, (specimen No. 7.) Sulphur is also found in this *chappar*. To the S.W. of Beloo is the Koh-i-Mata, where *surlabs* are also found.

A tax is levied by the Jam of $1\frac{1}{2}$ rupee on every pilgrim to Hingulach.

A tax is levied at Beloo by the Monguls and Beejanjoos, nominally 7 rupees per load, but 10 and 12 rupees are paid actually, as these people bring sheep partly and other supplies, which they force merchants to purchase at their price; besides taking of any to sending the small articles of merchandize.*

The price of a camel to Kalat varies from 8 to 16 rupees, according to the demand of carriage.

A tax is levied on cultivation of 1/- in kind.

On arriving at Beloo, I had a private interview with the young Jam and Raheem Khan Mongul, from whom I learnt that Faiz Mahomed Babee had, by letters, been from time to time spreading report exaggerating the opposition experienced by the army as it advanced from Candahar, and telling the Jam to be prepared in case of a reverse to attack the cantonment at Kurachee.

From Beloo the following is the road to Jaoo:—

1st stage 4 kos, over level road to the West.

2nd ditto 8 kos, over a difficult hilly road to Kumb.

3rd ditto 8 kos, to Erose, hilly road over the Jaoo Pass.

4th ditto 8 kos, to Jaoo, consisting of dry lands inhabited by sheep herds under Darya Khan and Chutta Murwarrees.

The inhabitants are Umaranees, and hold the Daée tenets. From Jaoo and Nondrah commences the district of Kolwah inhabited by Sajudees, who are great thieves, especially one Saká, who is famous throughout the country.

The best road to Jaoo leads, W.N.W. via the Maghal Pass, which joins the former road at Eron, where there is rivulet of that name, from which place to Mashkai is one stage, and to Panjgoor 8 marches. From this, Eron to Oornoch is one stage, inhabited by Beezanjoos. The principal man is Alla Dinna, who is very troublesome to caravans. From Oornoch the next stage is Peer; thence in a rivulet to Toorkabar.

2nd October.—Left Beloo in company with one Daroo, the darogah or manager of Eesa Khan Mongul, and proceeded 3 kos over a level road to Walapat due north, having to pass through jungle for the first 2 kos.

* Sic in MS.—Eds.

3d October.—Proceeded 8 kos over a level road, sometimes in a rivulet well watered, in a North and N.N.W. direction to Keehan on the Purallee river.

4th October.—Proceeded over an ascent 10 kos over a tolerable road except for the ———* where there is a defile or tank water on the road which depends on the rain. The general direction of the road is North some of the stages. Lulor, a place not inhabited.

5th October.—Proceeded 10 kos over a level road, then hilly, and Jamak, partly in the Kanojee rivulet, and over the Meeran Kush hill and Kanojee to Jamak, with no habitations except in the neighbouring hills, where there are Mongul shepherds. The neighbourhood of this place is generally the scene of the Mongul's depredations, and of the Beezanjoos under Futteh Ally. At this stage there is water and several kenhon trees.

6th October.—Proceeded 10 kos to Toorkabar, over a level road for Toorkabar. 8 kos, where there are 2 roads; the left one very hilly, the right a better one over the Baran lake, on which there is no water, whereas there is some on the left.

Baran was the name of the man who made the road. This road in the present state is not a gun one. The greatest difficulty extends for 120 paces. Two kos before arriving at the stage, is a place called Koh-i-Bahar Khan, where a halt is sometimes made. On passing the Baran lake the climate sensibly changes, and the heat of Mukran and Beloo is at an end.

Toorkabar means the cliff of the Turk; and report says, that a Turkish courier passing this cliff in the night, was by a false step, precipitated into the rivulet below.

7th October.—Proceeded 11 kos to Wad, the first 2 over a stony, ———* thence 3 kos dry land, called Dara-kala, where the territories of the Monguls and Beezanjoo separate. Beyond Docaliata to the West, a rivulet on part of the road, where there are some *zaitoon* trees. Thence the road over a stony descent for 5 kos to Sar-i-Aph, an excellent place for a military station; one kos further is Wad.

Wad has to the East the *chappar* (range) and to the West, Mashhai.

Wad. There are two villages; that on the West of the rivulet belongs to Hindoos, and that on the East to Mussulmans.

* Sic in MS.—Eds.

The water is scarcely in proportion to the inhabitants; to the South is the kour or rivulet of Sae. Wad has decreased in prosperity on account of several successive years of drought, and the receding state of the *karez*. Half of the place belongs to Walee Mahomed Khan Mongul, and the other to Taj Mahomed Khan and Eesa Khan of the same tribe, of the division Shaezai. The latter has the greatest influence of the three, on account of his being the most hospitable. The Monguls say, they formerly numbered 18,000, they may now amount to 8,000. On arriving at Wad, the darogah spoke to Eesa Khan about Intercourse. me and my intercourse with Ruheem Khan at Beloo. Next morning I was invited to see Eesa Khan, who put to me many questions regarding the British Government, and seemed to be much satisfied with the information I gave him. The next day Meer Eesa Khan gave me a guide to be ready to accompany me to Baghbanah, and I also learnt that Taj Mahomed Khan had started to Kalat to inform Mehrab Khan, that Eesa Khan had been holding private communication with a spy of the British Government.

11th October.—Left Wad and proceeded 5 kos over a level road in some parts stony without water, in a N.W. and N.N.W. direction.

Sungarjee. Sungarjee is a stage with no inhabitants; water in pools in a rivulet.

12th October.—Proceeded 10 kos over a road partly level and partly hilly. To the first 5 kos until arriving at the mosque of Azroo there Stage. is no water, thence at a short distance and near the road are two quarries of yellow *zak* (specimen No. 8,) thence across a rivulet with water, the direction being N.W.; stopped at a *kahnee* in this rivulet.

13th October.—Proceeded in the rivulet to Abi Jekran. On leaving the last stage there are two roads, the left to Nol to the N.N.W., Abi Jekran. the other to the right N.N.E. to Ferozabad, which consists of dry lands. On a hill to the left is a lead mine, on the other side antimony is produced.

14th October.—Proceeded 6 kos to Baghbanah in a N.E. direction ; Baghbanah. this place is surrounded by hills, and is subject to the Khan of Kalat, who has a resident deputy, a Shahghasee. There is a spring divided into 3 shares between the Khan of Kalat, Mahomed and Karam Khans Eltazai.

The lands of Baghbanah are divided among the chiefs; there are no ryots. Every chief has a separate village, over which he exercises sole and supreme authority. There is a measure which is [in weight,⁴ Company's seers.

The rupees current are the Chantree and Kashanee, the former at 14, the latter at 15 annas.

On reaching Baghbanah, I heard that Taj Mahomed Mongul on his arrival at Kalat, had told the Khan, that Eesa Khan had made an acquaintance with Kumal Khan to plunder the Khan's granaries at Baghbanah, and that on hearing this, the Khan had detached his brother and Shahghasee Noor Mahomed to see the real state of things, with orders to attack these Khans if the report of their intended revolt was true; but if not, to coax them to Kalat under the pretence of holding council as to the propriety of making preparations for hostilities with the British troops, when he intended to confine them.

17th October.—Proceeded 6 kos in a retrograde direction to Abi Sekran.

18th October.—From this 8 kos to the plain of Ferozabad, to a rivulet with a pool of water in it.

19th October.—Proceeded over a winding road in a rivulet to Nal Nal. in a Northerly direction. The cultivation depends on the rain. The chief is Meer Husal Khan Bezanjoo, who is very hospitable while a guest is under his roof; but as soon as he quits him, will not hesitate to plunder him; he could collect a force of 1,000 men.

20th October.—Proceeded over a level road 4 kos in a Northerly and N.E. direction over the dry lands of Nal, to a stage with water, but no inhabitants. In the evening started, and in the morning after

Gidar. travelling over a very bad road all night, arrived at Gidar, where I proceeded direct to my friend Baiee Khan; the road leading sometimes N.E., N.N.E., and sometimes North.

On the third day after leaving Gidar, being 23rd October, I reached Kalat, when hearing of a copper mine at Anjeera, I returned and brought back (specimen No. 9.) On my return to Kalat, I put up in the house of Hajee Mosim, a courier, where I hoped to keep myself concealed, but was soon discovered by Faiz Mahomed Búbee, who suspected the object of my late tour in News. Mukran, and would have no doubt persuaded the Khan to

seize me, had I not a few days afterwards left Kalat by night, and by stealth. Notwithstanding the British troops were in possession of Cabool, and Dost Mahommed was a fugitive, still Faiz Mahommed was diligent spreading reports prejudicial to the British ; one of which was, that Dost Mahommed had found a treasure of *tillas* at Khulam, and was collecting a large force, paying his troops in *tillas* at the rate that the British paid them in Company's rupees.

N.B.—I did not keep the dates during my journey, and am now bringing them up. I find a difference of 10 days, for I am certain that it was on the 23rd of October 1839 that I arrived at Shawl, after leaving Kalat. Here I was detained by the Political Agent, and I afterwards accompanied him with the British troops to Kalat, at the storming of which place I was present. I subsequently remained at Kalat with the late Lieutenant Loveday, who furnished me with a certificate, the following of which is a copy :—

" It affords me much gratification in writing this acknowledgment of the services and good conduct of Hajee Abdool Nubbee.

" He was with me at the storming of Kalat on the 13th November, 1839, and by his activity, intelligence and fidelity, has won my cordial esteem and regard. This certificate will, I trust, prove a good introduction for him to all my friends, and he need not, I think, need a better one to any one of my countrymen."

(Signed) WILLIAM LOVEDAY, *Lieut.*

Kalat, 8th February, 1840.

Asst. Political Agent.

NOTE.—The manuscript sent to us of this interesting paper was unfortunately so imperfectly copied as to render the task of editing it far from easy. The spelling of proper names as there given has been strictly adhered to, the more so, that the variations in the nomenclature of places (v. Arrowsmith Atlas, 1835, Burnes and Pottinger (?) Survey) from that as ordinarily received is so slight, as to render their recognition no difficulty : *ex. gr.* *Bampoor* for *Bunpoor* : *Gik* for *Gaih* : *Gwadar* for *Gwuttur*, &c. &c. the differences are merely those of local pronunciation so common in the East, where, to cite common instances, such towns as Lucknow and Moorshedabad are commonly called even in their immediate neighbourhood *Nuclow* and *Muksoodabad*; such variations should not only be looked for, but their publication encouraged.—*Eds.*

Itinerary from Yezd to Herat, from the Political Secretariat of the Government of India.

The distance from Yezd to Herat, is reckoned at 200 pharsacs.*

The direction of the route is N.E. as far as the town of Toon, from thence generally E. with a little Northing, if the road by Gownabad is followed; but if you pass by Birdjan, it is S.E. as far as that place, and from thence N.E. to Herat.

Caravans of camels use this route, they take from 35 to 50 days in performing it; horsemen, however, do it easily in 12 or 15 days. The road is in reality nothing more than a well-defined foot path, but as it generally passes over a level country, it could be easily traversed by wheeled carriages as far as the city of Toon. There are caravan serais at each halting place, erected by pious persons for the accommodation of Persian travellers, who go on pilgrimage to the tomb of Imaum Reza in Mushed, the capital of Khorassan. You also meet with, at certain distances, wells that have been sunk for passers-by to allay their thirst; but owing to the want of care on the part of the Government, they are almost all at the present day unfortunately filled up.

The plains to pass over are dry barren deserts, and seem from a distance like a sea of salt; of this description are those of Ali-abad, Shah-Abbas, Shiardil, and Garidj, where one meets with considerable tracts of country, the earth strongly tasting of nitre and salt; the only vegetation to be observed are a few saline plants. You have also to cross some low ranges of hills of an easy access as far as the sandy mountains, called "*Raig Shuturan*," which are about fifty pharsac N.E. of Yezd.

* The length of a pharsac, (parasung,) in this paper, must be much underrated. In a work called the Durra Muktai, its length is computed as follows:—

6 Barley corns, say $\frac{1}{2}$ inch, . . . =1 finger's breadth doubled.

24 Fingers breadth doubled, . . . =1 guz of 36 inches.

4,000 Guz, =1 Mile, koh or koss.

3 Miles, =1 Parasung, equal to 6 miles, 1 furlong and $\frac{1}{2}$ yards.

But by examining the survey which accompanies this Journal, the distance from Yezd to Herat cannot be more than 400 miles, and the pharsac must be taken at $\frac{2}{3}$ miles only.

You traverse the dependencies of this latter city, keeping on your right the great desert of Kabis or Kermanice, having on your left the salt desert, shewn in the present maps of Persia as being bounded by the cities of Kockon, Kayn, Seruman, Torkis, Toon and Tabos, and which the inhabitants state to be twenty-four pharsacs in length and breadth. The mountains of Bix Barrik are seen in the middle of this desert, and what is not least remarkable, is, that they are studded with villages, whose cultivated lands (sufficiently productive,) offer a pleasing contrast to the frightful wastes which surround them.

On leaving the mountains of "*Raig Shuturan*," you enter upon the eastern possessions of Khorassan, which extend as far as Herat. You first pass over the dependencies of Tubbus, which may be the *Tahren* of the Greeks; then follow those of Toon, which is no other, I presume, than the Parthanils of the ancients, and there still are the remains of tombs, which very possibly may be those of the Parthian kings: subsequently traversing the lands of Kagis, which you quit at the hills of Guisk to enter on the vast deserts, which end at Herat; the length being about forty pharsacs.

The ranges of hills which are passed during this route, are for the most part isolated, and of no great height; excepting those of Echolakan, Khanjuen, Kon and Guisk; they have a barren appearance throughout, and their want of vegetation is a strong proof of their richness in metals. It is much to be wished, that an able mineralogist would explore these countries, at every step he would make many useful discoveries. There is still a lead mine near the village of Echkidur, about six pharsacs W. of Yezd. The hill of Derind presents many traces of lead and silver ore. The earth of Posht-Badam produces some grains of gold. In the district of Toon, there is a lead mine near the village of Khok, one of copper on the other side of Khanjuer Khan, and another of silver at a place called Shia Nagree. All these mines were formerly worked, but from the oppression of the present Government which smothers all industry, they are now entirely abandoned.

I found on the surface of the earth between Buseriah and Toon, many handsome specimens of agate, above all, they are plentiful near Shia Dera.

On the range of hills near the castle of Fourk, you are still shewn the copper mines, formerly worked by Meerza Rafik Khan, the metal

from which was employed in casting several pieces of cannon, now to be seen at Birdjan.

The hills of Guisk are of a light red, which seems to prove them of a volcanic nature, and on the western side near the tomb of Sultan Ibrahim Reza, flows a moderately warm mineral spring, to which the inhabitants of the country go on pilgrimage, and drink the water for the benefit of their health. Many snakes are to be met with on this range, the bite of which is fatal.

Not far from the ruins of Gazun, is a stream, the water of which has a strong *acid* taste, near to Tubbus is another of a corroding nature.

Upon all the ranges of hills which extend from Batal to Herat, the people of the country gather a sort of gum called "*terendjebin*," of which the Persian medical practitioners make great use: it exudes from a small thorny shrub which grows in tufts, and which resembles the plant the camels are so fond of. The flower is whitish, like that of the lettuce, which on dropping off, gives place to a milky substance that congeals into yellow drops, which is the gum. For the purpose of collecting it, the inhabitants first cut the bush, allow it to dry, and then sift it. This plant grows wild in most of these sterile plains.

The greatest quantity of this gum is gathered in the district of En-joonzik, where also is found the asafetida; the plant which produces the latter, grows in almost all these hills, particularly those of Kelmond, Tabas and Khiliiki; and those which extend to the West of Herat. The plant grows to two or three feet high, the stem is straight, and resembles very much the coarse fennel of Corsica, it has thick roots, which extend to a considerable distance. To extract the asafetida, it is necessary, in spring time, to cut the stem close to the earth to prevent its shooting, when during this season, a milky gum flows from it, which becomes hard. Every night this is removed with the blade of a knife, and every ten or twelve days a fresh incision is made to allow the gum to flow freely. Those who follow this avocation, take the precaution to cover the plants, to preserve them from the heat of the sun. It is sold to the Hindoos of Herat, who send it on to India, where it is much used in cooking.

In addition to these two plants, many are found in the hills, said to possess medicinal properties, and annually collected by the druggists of the country.

The only wild animals to be found in the hills are wolves, antelopes, a few hares, and some partridges; bears are rarely seen; it is only towards the hills of Guisk, that traces of them are to be met with. We killed two enormous ones near the salt spring of Kaband. On this route, *you come upon troops of wild asses that abound in Seistan. This beast is much smaller than the horse, resembles in form the domestic ass, from which it differs only in the colour of its hair, which is reddish. Its speed is great, and they are long-winded, seldom allowing itself to be approached sufficiently near to be shot; the Affghans are fond of its flesh.

Amongst the very few trees to be seen near the hamlets, there is a bush in the district of Gosk, that produces the *zerisk*, which the Persians are so fond of in their pilau. The tree is like the pomegranate, its branches in September are adorned with scarlet berries, which have a pleasing effect.

The whole country which extends from Yezd to Herat is subject from May to October, to violent gales of wind. The heat is suffocating in summer; during this season, you are also exposed to the hot wind of the desert, but which in this country is not of a fatal nature. It rains in March, April and December; it snows a little in winter. Notwithstanding that there are two crops annually, the produce is barely sufficient for consumption.

What is most remarkable during this fatiguing journey, is the total absence of any natural streams of water; here and there are a few springs in a *karez** which are often brackish, and do not allay the traveller's thirst; and what does flow from them barely suffices to water a few acres of ground, and for which purpose, the inhabitants keep it in reservoirs that are only opened two or three times a day, and distributed with great care. Their miserable-looking dwelling places take off but little in appearance from the frightful sterility of the country; a small patch of verdure only distinguishing them at a distance. The people are generally sedentary in their habits, but you meet with some wandering tribes, such as Shrondanes, the Kazunes, the Bani Kazals, Beni-Assad and Beni-Kafodzes, who inhabit the lands of Tobaz and Toon. Towards the dependencies of Kayin, are the Falohies, the Shah-

* An aqueduct which brings the melted snow, or a spring from the hills.

bis, the Heeroonees, the Yakoobees, and the Elabousails ; all these tribes are of Arabic origin. A great many are colonies settled by Shah-Abbas, others of the time of Tamerlane, who, on his return from his conquests, established them in this country. These Arabs have neither preserved the customs or manners of their ancestors, except that of living in tents ; they have even forgotten all traces of the language ; all their wealth consists in cattle. They possess a greater mildness of manner than the inhabitants of the villages ; the latter give themselves up without exertion to their miserable lot, cultivating only a few acres of land, the produce of which hardly suffices to exist upon.

In place of cultivating much, the inhabitants pass their time in spinning wool, consequently they are often subject to famine ; besides being plundered by the Turkoman and Beloochees. Their fields produce wheat, barley, radishes, beet, and oil of sesamum. From a want of grain, forage and water, it would be impossible for an army to march through this country : consequently, from time immemorial, there are only two instances of this having been done. Shah-Abbas was the first who had the hardihood to do so, with a portion of his troops on his return from the conquest of Candahar. This great monarch astonished at the sterility of the sandy mountains, and the dangers which travellers were put to, halted and directed wells to be sunk, besides building small pyramids at certain distances as guides across this country of moving sand, the passage of which is so dangerous. The inhabitants of Robad still point out an elevated spot where this restorer of his country pitched his tent, and from whence he was delighted to watch the progress of his works. Most of the wells and caravanseries from Yezd to Toon, owe their existence to him. The sand hills are formed by violent gales, which blow in this country at certain periods, and which continually heap up the sand of the desert against the sides of these low ranges. They extend from N.W. to S.E. This route is a point of communication between the great salt desert and that of Kobis, and by which Meer Mahomed ventured in 1722, with a horde of Affghans, when he dethroned Shah Sultan Hussein, king of Persia.

This route since 1812, has become very dangerous for caravans, on account of the gangs of Beloochees that lay wait to plunder them. Since that time, the pillage collected by these marauders, has amounted to immense sums : often, on finding nothing to capture on this route,

they have extended their incursions as far as Kerman, Isfahan and Kochan, but with little success; many of their company being killed. As soon as one has collected sufficient plunder, he returns, and his place is filled by another. To arrive at these places, they traverse the desert of Kobis on the backs of camels, often making from twenty to thirty pharsacs a day. The gangs are never less than thirty, and seldom amount to one hundred men; the greater part of them are under a chief called Khan Dijun, who lives in the fortress of Shaknapoor, on the borders of Seistan; he it is, who sends them on these expeditions, and receives one-third of their booty as his share. These ferocious fellows have a sun-burnt complexion, their dress consists of a long cotton frock wound round the waist, with a thong of camel's hide; their heads enveloped in turbans. They shave part of the upper lip, leaving only the end of their mustachios, and allow two long locks of hair to fall on each side of the face, which reach to their shoulders. When they visit these sandy mountains, they halt and encamp at Shia Bactiara, or rather near the source of a spring, about two pharsacs to the right of the road which leads to Choutoran; here they leave their camels, and advance upon the road on foot to attack the caravans; they lay in ambush in all places, but the principal spot is in a defile near Godin Komber, to the N. of the sand hills. The Beloochees hiding themselves behind the heights, allow the caravans to enter the defile, when possessing themselves of both outlets, they pounce upon their prey, sword in hand; those who make the least resistance, are sure to be massacred without pity. By their unheard-of cruelties, they have made themselves so much feared, that twenty or thirty of them have been known to plunder a caravan of two hundred persons with impunity, the great part of them armed. The murders they have committed, are without number. The most dreadful took place in 1823, when they put to death a hundred or more pilgrims going to pay their devotions to the tombs at Mushed. There is still to be seen near the third pyramid, a heap of the remains of these unfortunate creatures, as a warning to other travellers. At the time we passed, we saw the bodies of five persons that had recently been murdered, and their assassins were encamped at Shia-Bactiara as we passed, but as they were few in number, they were afraid to attack our caravan, which was a strong one; we were well armed, besides having an escort with us. A detachment belonging to them, six in number, re-

turning from a plundering excursion, fell in by mistake with our advance guard and were sabred; two of them that were not killed, were taken on to Robad Khan, where they were tied to a tree, and shot. The people of the village that witnessed their execution, shewed signs of discontent, but they were not attended to; this makes me believe, that they are in league with the Beloochees, and that it is from them, the latter purchase their provisions whenever they are obliged to stay any time here, to wait for a favourable opportunity of attack; and what confirms me in this idea, is, that they never plunder on the lands belonging to Robad Khan, whilst there is no sort of violence that they have not committed on those of Sogan and Posht-Badam.

The governor of the country, who has every means in his power to put a stop to this pillaging, makes no attempt to do so, beyond going through the form of having a detachment of cavalry at Robad, with orders from time to time to patrol as far as the sand hills. One is equally astonished to find that the Prince at Yezd allows his territory to be plundered with impunity. Those in power, that he has placed at Kharom Sogan and other places, are more to gather a tax from those that pass by than any thing else. The only precaution they take, is to prevent a caravan from going on when they hear that the Beloochees are out plundering; for this purpose they have videttes posted on the highest places, who by signs of fires, warn the inhabitants to take to their villages. Under a better administration, it would be easy to put a stop to this rapine; detachments of cavalry posted at the most dangerous places, would preserve the tranquillity of the country, and protect travellers, who now, during this fatiguing journey, are always in fear and inquietude.

This danger is not the only one to be feared during this march; one is also exposed to that of meeting with Turkomans, which is still more terrible, as in case you fall into their hands, you are carried off to slavery. The Turkomans, who are addicted to plundering, are generally of the Imak tribe, the chief of whom lives at a place called Meimaneh, about eight days' march from Herat. From time immemorial, their hordes have been in the habit of plundering with impunity both Khorassan and Herat, without the princes at the head of these provinces being able to oppose them; their incursions are rapid and unexpected; they plunder all that they encounter, and carry into slavery, men, wo-

men and children, that are subsequently sold at Bokhara. It is not only the prospect of plunder which induces them to undertake these forays, but also the desire to satisfy their hatred to the Persians; being Soonees, they believe they are performing a meritorious action in the eyes of the Prophet in taking the Persians into slavery, and in obliging them to abandon the sect of Seeahs to which they belong, to adopt their own. The dangers from the Turkomans commence on the territory of Koon, and only finish at the gates of Herat; the worst part is between Kain and Kauf. To avoid this part, our caravan conductor took another route more to the South, and which led through the district of Birdjan, but this precaution nearly proved fatal to us, for about three days' journey before reaching Herat, we were attacked by a band of Beloochees, that were only driven off by an obstinate resistance on our part.

The inhabitants of these countries have neither security or repose, the poor wretches in cultivating their land are always kept in a state of alarm, and often obliged to abandon the fruits of their labour, that they may not fall into the hands of the Turkomans. To live in some sort of security, they are forced to build small watch towers in their fields, to which they fly in case of pressing danger, which can only be entered by ladder. Not a family to be met with, but has to complain of one of its members being carried off into slavery by the Turkomans; but what is surprizing to learn is, that those who have been so taken away, make no exertion to return to their native land, on the contrary they write to their friends, that finding themselves comfortably settled, it would be madness on their part to make any sacrifices in attempting to restore them to liberty; some of them even act as guides to the Turkomans on their expeditions. At the time we travelled this route, the greatest ravages were being committed by them. The district of Herat was so infested, that Prince Kamran was obliged to seek the alliance of the Prince of Khorassan for them, in common cause, to attempt to put down so great a scourge. To avoid this danger, I parted from the caravan at Sedik, and went to Birdjan to see if I could not procure an escort from the governor, whom I had known well at the Persian court at Tehran. He was astonished to see me, received me with great kindness, and loaded me with presents. I learnt from him, that Mr. Oms, who had left the Persian service in 1824 to go on to India, had

been arrested by his people, stripped of his effects, and confined in the citadel at Fourk, from whence he had contrived to escape. So different was the treatment I received, that I appreciated the advantage of acquaintances in a strange land. The Khan furnished me with an escort of cavalry, which I sent to my friend and fellow-traveller Avitabile, and who directed the march of the caravan upon Avaz, passing by the stages of Dijisk, Gosk, and Nahkop; as for myself, I followed the road by Fourk, accompanied by a son of the governor, who did not separate from me until we arrived at Avaz. In passing by Fourk he took me to see the copper mine that his forefathers discovered, the metal from which was used in casting some guns that are now in the castle of that place.

On our arrival at Herat, we found the province exposed to civil war. Prince Kamran having in the month of April 1826, driven out his father Mahomed Shah, two parties declared themselves, and urged a furious war; the king with the assistance of Boonia Khan, at the head of the Azeris besieged the fort of Herat during the month of June, but the desertion of some of his troops obliged him to fall back upon Farrah, from whence he was taking fresh measures to drive his son from this province. These preparations obliged Kamran to seek an alliance with Hoosain Ali Mirza, Prince of Khorassan, who flattered by this submission on the part of one, who, up to this time, refused to acknowledge his authority, and foreseeing the advantages to be gained to himself, sent to his support six thousand men and four guns, under his own son Orghan Mirza. Their united forces were encamped on the banks of the Morgab, with the intention of opposing the Khan of Meimaneh, who was coming to the support of Mahomed Shah.

The city of Herat, which is no other than Aria of the Greeks, was, it is said, built by Alexander the Great. The inhabitants state, that the plain upon which it now stands, was formerly a lake formed by the waters of the Heri, and kept in by the range of hills called Senjer D'jun, through which Alexander having cut a passage for the water to flow, the plain was left dry, and the beauty of the country induced him to found this city; one thing is certain, that the castle situated about six pharsacs to the East of Herat, was built by this conqueror.

The city of Herat is small, and enclosed in a high wall built of mud, flanked by towers falling in ruins, surrounded by a deep and broad ditch always full of water. The city contains about six thousand houses,

twenty caravanseries, thirty public baths, four bazars, six colleges, and the Prince's palace, which may be considered its castle. There is nothing remarkable to be seen but the palace of Ibrahim Khan D'Janshid, and a large and deep cistern, which supplies the greater part of the population with water, it is filled by an underground aqueduct (*karez*) which comes from the hills. The population amounts to about forty thousand souls, about two-thirds of whom are Persians, the rest Affghans. The commerce, which is carried on with Bokhara, Kandahar, Mushed and Yezd, attracts a great many strangers to it. Its productions are silk and cotton. It was pillaged by D'Jengkis Khan in the year of the Hegira 619, and again by Tamerlane, whose descendants for a long time made it their residence. This city gave birth to the celebrated historian Khondemir, author of an abridged Universal History, also to the poet D'jaim, who flourished during the reign of Sultan Hussein of Bokara, of the race of Tamerlane, and to whom he dedicated his "*Bahoristan*." The environs of Herat are exceedingly agreeable. Among other places, are the country seats of Takli, Sofer, Goozerja, and the garden of Shahzada Mulik Kossoura, which are situated to the N.E. of the city. On this same side is also the famous mosque of Moossa Hola, which is close to the royal garden; such an edifice is rarely to be met with in Persia. It is now in ruins; it has six minarets and a large college, and what remains, is sufficient to shew, that its architecture, though simple, was elegant and well adapted to the climate. The richness of the ceilings and domes are surprising; the walls for the most part are Mosaic, built of glazed bricks, which, from their embellishments, present an agreeable appearance to the eye; the minarets above all, from their lightness and height to which they have been erected, are most pleasing to behold. One of these has inclination towards the tomb of Imam Reza in Mushed, which the over-religious ascribe to a miracle, and which is shewn with great display to travellers. This superb edifice was erected by Sultan Hussein Mirza Bairam, at the entreaty of his favorite slave Goher Shah, regarding which, the inhabitants tell a marvellous tale; others give the credit of building it to Gaist-uddeen of the Gawridean dynasty; it was destroyed by the Tartars of D'Jenghis Khan.

Not far from Gowzherab, upon the hills near where this garden is situated, is a ruby mine, which was formerly worked, but has since been abandoned in consequence of these precious stones being latterly found

full of very minute holes, which took so much from their value; further to the East on the same range is a lead mine, which Prince Kamran works on his own account. The mountains which extend to the North are said to be wooded, and among many kinds of trees, is to be found the pistachio and other fruit trees in a wild state. The druggists also gather many herbs from these hills, and the dyers also find seeds and roots which they use with advantage in dyeing their clothes, and in which they excel us Europeans. The valley of Herat is of a fertility seldom to be met with in Asia. In approaching it, the richness of its enclosures and the number of villages, gladden the traveller's sight after the fatiguing journey he has to make over barren deserts to reach it. It must be about four pharsacs in breadth from N. to S., and about thirty from E. to W. The inhabitants are calculated to possess twelve thousand pair of bullocks for agricultural purposes; the fruits are in great numbers and excellent, they reckon as high as thirty-two kinds of grapes, of which the best are the Kaye Goramun and the Resil Baba. I observed that the vine was cultivated in a manner peculiar to this place. The country is everywhere intersected by canals fed by the Heri river, which almost leave the latter dry. The principal one is called the Eedzil canal, which passing by the royal garden, fills the ditch of the fort. The Heri river has its source in the hills to the E., its course is to the W., and loses itself in the desert which stretches to the N. of Khorassan; it is therefore a mistake in some geographers making it discharge itself in the Zeri lake. It is crossed by a bridge called the *Poolmalan* to go to Candahar; on the Mushed road it is crossed several times.

The city of Herat from the time of Nadir Shah has always been an "apple of discord" between the Persians and the Affghans, who have disputed each other's right to it by sanguinary wars, the latter having almost always the advantage. In 1818, the Persians wishing to take advantage of the troubles which then existed in Affghanistan, did their utmost to reconquer it; in consequence a battle took place at Kafir Kala, where the Persians, although victorious, were obliged to give up the attempt. Since that time it has remained with the Affghans, who have not been molested, from the frequent insurrections in Khorassan keeping the Persian troops in check. Soon after this, the Barukzyes having de-throned Mahomed Shah, this city only and its dependencies remained the property of this unfortunate king, who had again the weakness to

allow himself to be despoiled of this by his son Kamran Shah, who now governs it. This prince nearly 50 years of age, is brave and full of courage, of a determined mind and great activity; there is no means that he does not use to attempt the recovery of his father's kingdom, but the want of money obliges him to wait until Providence offers a more favorable opportunity. It might, however, not be a difficult task for him to accomplish, considering that the Barukzye chiefs do not act in concert, and even make war between themselves; and further, their rule is so selfish, that all the tribes are disgusted with their avarice, and ripe for revolt.

The city of Herat is capable of being better fortified. This place, in the hands of Persia, would, from its geographical position, have a great influence over any expedition sent from Russia in the direction of India as an ally. It would keep in awe the people of Bokhara, Balk and Kandahar, and by preserving its communication with the rear, permit it to advance without fear to conquest, but occupied by an enemy, it could cause insurmountable obstacles.*

From Herat to Cabool, via Candahar.

On leaving Herat, two routes present themselves leading to Cabool, one by the Huzaree country which does not take more than eight or ten days, the other is that of Candahar which is much more circuitous. Our anxiety to reach the end of our journey made us incline to follow the first, but after taking the opinion of merchants, we were obliged to give up our intention of following that route, not only on account of the roads being so bad in this mountainous country, but also from the dangers to be run from the oppressive conduct of those who govern it, towards travellers passing through; we therefore gave the preference to that by Candahar. This latter route passes along the western side of the Firooz Khan chain of mountains, which extend as far as Candahar, dividing Seistan from the province of Gawz, and the distance about one hundred and twenty-five pharsacs; it is almost entirely over open plains, occasionally crossing low ranges of hills, which are in no way difficult for guns to traverse. The only inconvenience that troops would find on this road, is, that it is thinly inhabited, and but few supplies.

This view of a political position some as existing some years ago in a country with which we have since had so much to do is by no means distributive of utrospection interest.—Eds.

plies to be had, besides the want of water at some of the usual stages, which would oblige them at times to make double marches; supplies could be drawn from Furrah and Goriskh. The caravans that use this road are composed of camels, rarely are mules to be met with: they pay a tax of three sequins, and horses six, with a present to the conductor of the caravan; camels generally travel the distance in twenty five-days, horses in eight, or at most ten. The latter march day and night, and only halt during the time necessary to rest their laden beasts; they commence to march generally at mid-day, and do not halt until midnight. They always rest at places some distance off the road, to avoid any thieves that may be abroad. At day break they are again in motion to arrive at the next stage about two or three hours after-sun rise; here some hasten to get a little rest, while others are employed in cooking and giving their horses a feed; at 12 in the day they again are in motion, and continue the same time as the preceding day. This manner of travelling is slow, and most tiresome for a person who is not accustomed to it. Before commencing our journey, we laid aside our Persian costume to assume that of the Affghans; this precaution was indispensable, as the latter being Soonees and detesting the Persians, we should have been constantly in trouble. The better to deceive them, we had our beards and mustachios fashioned after theirs, and during the whole of the journey, we conformed to their ways.

We left Herat the 1st of October 1826, our first halt was at a caravanserai of Shahabad, which is, after passing the defile called Mir Dooad; in passing through which, I was imprudent enough to separate from the caravan, and my friend Avitable and myself would most assuredly have been assassinated by some of the Noorzye tribe, who inhabited these hills, had we not owed our escape to the fleetness of our Arabs. It is in these gorges, that commences the lower range of the Ferauz Khan mountains, its direction is from N.W. to S.E., they are not however, to be compared in height to those which extend further to the N. The most elevated spot is called Firoug, from whence branch off two ranges, that of Karek and Kosserman, which run towards the W. These valleys are some of them cultivated, and others not. They are inhabited by pastoral people, who live in tents, and who generally encamp near the source or by the side of a rivulet; they communicate by a number of paths accessible to horsemen.

On quitting Shahabad, we left the high road to the right, and took a cross route ; the reason which induced our guide to this, was, that he wished to avoid the troops of Mahomed Shah, which were encamped in the plain beyond, and who were committing dreadful ravages. The country we passed over was very hilly, it was intersected by two small streams, the Ghag and Adreska, which coming from the N.E., are said to fall into that of Furrah. At the time of our crossing them, they were nearly dry, but at the melting of the snow, they swell to that size, that the caravans are often obliged to halt for many days. This country was covered with the wild pistachio, which in autumn, is covered with a rich fruit. This tree seems to flourish best in barren spots, it gives forth a quantity of gum in white drops, of which the people make no use. They gather the fruit, which they take as a stomachic. After making two marches, we descended into the plain of Dowlutabad, debouching from the Korek chain of hills by rather a difficult descent ; more to the West, there is a much easier descent, by which goes the high road leading to Furrah, the birth-place of the famous Rustam, the Hercules of Persia, and who is so often made mention of in the Shah-Namah of Firdousee. The plain upon which this place stands, is, for the most part uncultivated, if we except its immediate environs ; it is intersected from E. to W. by a small river, which, having its source in the Firouz Khan mountains, passes through a part of Seistan, and finally empties itself in the lake of Zeri, or may be the Aria-polas of the ancients. I presume, that this river is no other than the Pharnacotes of the Greeks, and that the city of Furrah is the Phra of antiquity. At the time we crossed this river, it had but little water in it, but in spring, it is said to be full and rapid ; the bed is pebbly, and its banks covered with tents inhabited by Noorzyes. On quitting this plain, we left the high road to the left, to follow a bye-path, which led through a pass called Kindzye Endgoust ; a terrible road for our poor-laden beasts, and bad enough for those on foot. This defile is remarkable on its eastern side for having its entrance like a gateway, formed by two enormous rocks ; a small stream which rises here, gives a picturesque appearance to the place. The high road leads through the Kasserman pass, about six pharsacs higher up, and which is in no way difficult. From this we entered upon an extensive plain, opening as far as the eye could reach towards the South, through the middle of which was running a small stream, called the Ibrahim, and

which waters the lands of Bakora, an isolated village. The plain was covered with hares, antelopes and wild asses; this last species of quadruped, is always in herds. In the middle of the plain, stands a small hill called Kou-Doug; passing to the North, we found ourselves attacked, without warning, by a band of Beloochees, some on horseback and others riding upon camels. They succeeded in carrying six beasts that were laden from the rear of the caravan; during this time we rallied and opposed them, but continued moving on with our ranks well closed up; returning to the attack, they made another attempt to overpower us, but a volley that we discharged, obliged them to retire, and permit us to continue our route unmolested, which we did as far as the Kostraud river. From thence we entered again into the passes of this hilly country, moving with the greatest caution, for fear of encountering more Beloochees, but happily we met with no more disasters. Our next stage was at the village of Vorachenk, which is encircled by a mud wall, it is inhabited by Noorzyes, who have the character of being very expert thieves: they are in the habit, like the rest of the Affghans, of collecting and mixing with the caravans, under the pretext of seeking for news, and committing every sort of pilfering; it is necessary, therefore, for travellers to keep a sharp look-out, or they are sure to be plundered: the country which extends to the N. of this village, is neither cultivated nor inhabited. The river Kosh-Zaub passes through it, coming from the N., and which is no other than a strong torrent, which, at the time we crossed it, was nearly dry; in these hills, according to Kondemir, lived the noted impostor Hakim-ben-Hasheen, who, from natural causes, produced effects, which astonished the inhabitants of these countries, and who looked upon him as a man inspired.

On leaving Vorachenk, we descended through a mountainous country into the plain of Sar, inhabited by the tribe of Subjezyes, having always in sight the Dohar hills, which forms part of the Ferouz Khan range, and which are inhabited by Alizyes. This country of Dohosi may very possibly be Dat, where Alexander passed through after having defeated the Scythians. From this, we moved upon Girisk; in approaching this town, a great change for the better was observed; in the surrounding country, we saw a district well cultivated and watered by the Helmund river; this river has its source in the province of Gour, entering on the low country through the Dohar hills, it runs here from the N.E. to

S.W., but lower down to the West, passing through Seistan, and eventually losing itself in the Zeri lake. On leaving the hills, the Helmund is a rapid stream, and having very confined banks, it is subject to overflows. During some time in 1825 this occurred, when it swept away more than ten thousand tents, including inhabitants and their flocks that were encamped upon its banks. The water is very clear from passing over a gravelly bottom, excepting during the rainy season it is fordable in some places; the best is that by which we crossed, and which is about three miles above Girisk: it is known from there being a number of high poplar trees close upon the left bank. Here the river divides into three branches; the eastern one of which is deepest. Artillery might cross over, but not without unloading the waggons. It is surprising that there are no ferry boats, considering it would not be difficult to construct them, as the neighbouring hills would furnish sufficient wood, but the Affghans have not sufficient foresight to see the utility of it.

Girisk is a good sized place, situated about $\frac{1}{4}$ of a mile from the Helmund, but which formerly washed its walls, the intervening space being now rice fields; it is defended by a fort, on an elevated site, and which commands it; it is of no great strength, and could offer no resistance to Artillery; the side which faces to the East, is on level ground, but the other three has it much broken, and by taking advantage of the ravines, they can be approached to a very short distance; in addition to which the fort might be mined. It was built by Peerdil Khan, one of the present rulers of Candahar; it is the principal seat of the Barikzyes, who inhabit the banks of the Helmund: this tribe has become the most powerful in Affghanistan; its chiefs having dethroned Mahomed Shah, have divided amongst themselves the provinces of the kingdom, which they rule despotically, and live in a perfect state of independence. Here we were subject to a most rigorous examination; the people of the custom house actually searching us to the very skin, and for every sequin found on us taking at the rate of five per cent. and every laden animal was taxed at two sequins, the vagabonds practising every kind of fraud to impose upon the merchants, and even confiscating a part of their wares. From Girisk to Candahar it is not more than 20 pharsacs; the road is generally over a very barren soil; the Firaz mountains are still in sight, and which here join the Shah Macesoond mountains, from

these latter two other ridges branch off to the S.W., which enclose the district of Maeevend, famous for its fruits, and above all, the pomegranate. On reaching Koosh-Nakout, we found ourselves upon a spot, which was admirably calculated to defend the city of Candahar on the West. From this is visible the Arghanab river, running to the West, and which empties itself into the Helmund about four pharsacs below Girisk. The country which extends to the South, is covered with sandy hillocks for about forty pharsacs as far as Neski and Karon, situated in Beloochistan, and from whence the Candaharians procure camels and dates. The right bank of this river shews many rich villages; the principal are, Lenguissar, Kolk, and Pachemour. On examining the course of the Arghanab, I could not fail to remark the great error into which Danville has fallen, in making a pretended river rise at Candahar, to which he gives an eastern course, eventually falling into the Indus. Foster has likewise given to this river a false direction.

I observed, that all the rivers which are in this province, such as the Arghandab, the Turnuk, the Arkassan, and the Doree, pass to the West, and discharge their waters into the Helmund. I presume the Arghandab is no other than the Arachotus of the Greeks, because they say, it fell into a lake; its source is at the Goolkoo mountain, in the district of Naoor.

After having forded the Arghandab, we entered the plain of Candahar through the pass of Chehul Zenee, so called from forty steps which lead to a grotto, situated at the end of a hill close to the right, and which the Affghans say, were excavated by a descendant of Tamerlane. This point also presents an admirable defence to the city of Candahar; the numerous canals which intersect it would be difficult to pass. There is still to be seen the ruins of a small fort, which formerly defended this entrance. From the end of the hill, the view is most picturesque, on one side you have below you a superb valley, covered with meadows and gardens, and on the other the vast plain of Candahar; nature has here been prodigal, the water of the Arghanab, fertilising the country by innumerable canals, the principal of which are the Noodseezan and Patab, the last, before reaching the city, passes by the village of Shah Dooteran, and is full of grains of mica.

The city of Candahar was built by Ahmed Shah; in the construction of its buildings which in general are of no solidity, and with little taste,

it is easy to see that they were erected in haste, and without any ornament. Two principal streets run through it, crossing each other at right angles, and meeting in the centre of the town, which is called the *Chir Son*, over which is a lofty dome, from whence the streets face the four cardinal points ; they are broad, and are intended to have been grand bazars, but have never been completed, and in their places have been built miserable huts. The only building in Candahar worth noticing, is the tomb of Ahmed Shah, which is surmounted by a handsome octangular dome ; the garden that surrounded it, has been entirely neglected.

The population of this city may be reckoned at twenty-five thousand souls, composed of Affghans, Persians, Beloochees, and Hindoos ; who are distinguished from each other by the form of their head-dress ; the first are most numerous. I observed that the females are kept more secluded than in Persia. It is very rare to encounter women in the streets ; those that go abroad, are of a tribe that practice medicine, and bleed the sick. Among the crowds that are seen in the bazars, are many half-witted creatures, that are perfectly naked, and whom the Affghans treat with great consideration, considering them to be inspired by God. They are called Houlliads, that is to say, Saints ; at their death, tombs are built over them, which eventually become places of pilgrimage to the people of the country ; this is why so many places of this kind are to be met, particularly at Candahar. The principal ones are those of Shah Masesond, Baba-Wallee and Huzrutgee, the first is about ten pharsacs to the North, upon the range of hills which bears the same name. They there find small yellow stones, transparent and like amber, with which chaplets are made, and are in great request among the Affghans ; other colours are found, but not of so fine a water as the first. Candahar is not commanded from any point ; it has a wall for defence flanked by towers, and in pretty good order, but which could offer little resistance to artillery. The ditch which encircles it, is not deep ; it is filled from the Patab canal, which would be easy to turn in another direction by a besieging army, and thereby reduce the inhabitants to their wells, of which there are very few within the town. The ancient city is situated close under the eastern side of a hill, which bounds the plain of Candahar to the west. The remains of the citadel are still to be seen from some distance ; it is now entirely in ruins, and deserted, Nadir Shah having destroyed it. There is to be seen at the

end of the hill the small fort Kola-took, from whence this monarch battered it with his artillery. The siege lasted six months, and would have continued longer, but that the daughter of Shah Hossain betrayed and delivered the fort into Nadir's hands, who, as the price of her crime, had her quartered in the presence of her father. From this fort a number of walls for defence branch off, and continue to the foot of the hill, and which were built to resist the attacks of the Persians. It is supposed that this city is that which Alexander built in Arachosia.

The city Nadir Shah built, is about three miles south of Candahar, and is now also in ruins. The ground of Candahar is very rich, and well adapted for the growth of vines, which is not however sufficiently cultivated, and much less than at Herat; its principal productions are wheat, barley, tobacco, and madder: they also grow maize, peas, beans and oil of sessamum. The banks of the Arghandab are studded with orchards which produce a great quantity of fruit, above all, pomegranates, mulberries, apples, plums and apricots; this abundance would allow of an army halting here for many months; they are all remarkably cheap. Spring is the pleasantest time at Candahar, the heat is great in summer, and above all, when there is a southerly wind. It is remarked, that it only snows here about once in seven years; the climate is considered healthy, excepting in autumn, when fevers are very common.

Amongst the several tribes that inhabit this country, the Barikzyes are the most powerful; then the Achikzyes; and after them the Populzyes. The first reside in villages, and the others are nomads, the riches of the latter consisting in their sheep and camels.

The true character of the Affghan is better observed at Candahar than at Herat, Cabool or Peshawur, as in the three last places, the number of strangers mixed with them has softened their national traits. If you compare their customs and usages with the Persians, you will find them very similar, as they both follow the precepts of the Koran; but as a nation, one cannot help remarking that they are much rougher and coarser in their manners. The want of civilization amongst them proves that their rulers are always occupied in defending themselves against the attacks of their neighbours, and have never thought of ameliorating their laws. The Affghan has neither the vanity or the politeness of a Persian; so far from resembling him in his easy way, and empty compliments, he is grave, distant, cold in his replies, and even a little too

rude in his manners. Beyond the respect he pays to his master, he looks upon all as his equals, and addresses them without ceremony. A European travelling in Affghanistan, must be immediately struck with the familiarity which exists between the high and low, nevertheless an Affghan is a slave to his master; beyond this, however, he would rather suffer himself to be killed, than subjected to a foreign yoke. Deriving his origin from a wandering tribe, he practises hospitality equal with the Arab.

He is courageous, and believes himself to be the bravest soldier in the world, on this point he is quite convinced; he delights, in recounting the exploits of the Dooranees that adorned the armies of Nadir, and conquered India under Ahmed Shah; he delights in times of disorder, as it gives him an opportunity of gratifying his inclination to plunder. In religion he is a fanatic, and is as superstitious as a Turk or Persian, being a Sonnee in the strictest sense of the word, he detests the Persians who are Sheahs. Beyond this, he is tolerant towards other persuasions, above all, to Christians, as he believes in the Gospel, and looks on it as an inspired work. Like the Persian, he puts great faith in dreams and astrology, and possesses equally with him all the prejudices of the Mahomedan; but still will partake of food with any one of a different sect to his own; he has no education; with them, their rulers and priests are the only persons that can read or write; their books are in Persian. From their youth they are taught to use the spear and the sword, to take a true aim, and to ride well, and this is all the instruction they receive. An Affghan is a good swordsman; his food is bread, rice, meat and milk; *kouroot*, (a kind of curd,) is his favorite dish, he does not indulge in wine, his religion prohibiting it, but he delights in drinking *bang*, and smoking intoxicating drugs, the use of which for the time produces a sort of stupor, which delights the senses, but the excessive use of which soon brings on imbecility of mind; his dwelling is like the Persians, with this difference, that it is more simply furnished. Their luxuries consist in having fine horses, splendid trappings, rich attire, and above all many retainers. Their costume is much the same as the Persian, only differing in the head dress. The sheep skin cap is here substituted by an unbecoming cap wound round by a large blue turban with a red border, which by the manner of putting it on, points out the particular tribe to which they belong. The

beard they look upon as sacred ; nevertheless in place of allowing it to grow naturally, they cut it to a fantail shape ; they also clip the centre of their moustaches, allowing the sides only to grow to any length.

The province of Candahar since 1818, has been governed by five brothers, Peerdil Khan, Khandil Khan, Sherdil Khan, Ramdil Khan, and Meerdil Khan ; the principal authority is now in the hands of Peerdil Khan, on the death of the latter in 1826. Their troops are about six thousand cavalry, and four of infantry ; with more revenue, it would be easy to double this force. The Candaharians are good swordsmen, but not being disciplined, have no steadiness ; they receive but small pay, and only assemble when wanted. The infantry are armed with sword and matchlock, long, but of small bore ; they have about twenty pieces of cannon almost useless, and without artillery-men to serve them. The rulers of this country seem to have adopted for maxim, to know no other law than their own absolute authority, grasping for money ; there are no means to procure it, that they are not capable of. With them to be rich is a crime, which soon brings on confiscation and ruin. They have debased their coin until the alloy preponderates. All merchants and strangers arriving here, before being allowed to circulate any foreign money, are obliged to get it stamped, paying a tax of 5 per cent. or run the risk of its being confiscated ; also every merchant before leaving this, is forced to have each article marked by an agent of Government, on which there is a fixed rate, evading which, his whole property is seized, and lost to him for ever. It follows that the commerce of this place, which was once so flourishing, has become almost nothing. Candahar was once the "entrepôt" of the produce of India and Persia ; it still receives from India supplies via Shikarpoor ; shawls from Cashmeer by way of Cabool, which are sent on to Persia paying a transit duty, which is generally arbitrary. Silk and cottons that are manufactured here barely suffice for home consumption. The principal trade is in madder, tobacco and dried fruits, which are sent to India.

The road which leads to Shikarpoor is not much frequented by merchants ; it is a difficult and dangerous route, and about 360 coss long ; at the end of this journal, will be found an abstract of the route, given to me by a native of Candahar,* who has often travelled it. This route

* As this route has been travelled now by our troops, a more correct one is substituted.

cannot be considered practicable for an army ; during summer a great portion would perish for want of water ; if it was to be attempted under all hazards, it would be necessary to establish at different points depots of supplies, besides each soldier being furnished with an iron plate to cook his cakes, as done in the East, and every company supplied with a small hand-mill to grind flour ; without these precautions, they would run the risk of perishing of hunger after the first few marches. These difficulties compelled the merchants to select a new line of route further to the North, which passing by Khelat-i-Nassir Khan, through a country inhabited by Beloochees, ends at Der-i-Ghazi Khan, situated on the banks of the Indus. That which leads from Candahar to Cabool, offers none of these difficulties, excepting, that it is not practicable in winter, from the quantity of snow which lays. Although passing through a hilly country, it presents no obstacle to the march of artillery ; it winds through a rich valley, closed in by two ranges of hills having a North-easterly direction as far as Cabool, and running nearly parallel the whole way. The northern range, which is no other than the Parafornisan mountains of the Greeks, is very much more elevated than the Southern one ; this latter seems to abound in metals. The valley is most fertile, and traversed as far as Mokur by the Turnak river, which joins the Argandab. It enjoys a bracing and healthy climate, and this is the reason, that between Pootee and Julduk are still to be seen the ruins of an ancient city called Sher-i-soofa, meaning the city of health. The mountains which extend to the North of the province of Candahar, and the sand hills which go off to the South, make this city the point from whence the two routes to India by Shikarpoor and Cabool lead ; any army from the North, marching to the conquest of Hindoostan, must necessarily pass this, halt, and take proper measures for supporting its further advance.

After forty days' detention, a caravan being about to start for Cabool, we hastened to take advantage of its protection, and quitted Candahar the 28th of October, and in four days found ourselves forty coss in advance, and arrived at Mokur. Our halting places were Pootee, Julduk, Tajee Mookeri ; so far I observed that we passed very few villages, but in their places an infinite number of black tents, inhabited by tribes of Sudoozyes, Alikzyes and Giljies. I remarked, that their women did not cover their faces with that care that those in the

villages did; however, they still wear a veil, which partly conceals their countenance. Their dress is of a peculiar shape, which somewhat approaches to the European. Their hair is divided in front by two long plaits, which with married women are allowed to hang negligently over their shoulders: but before marriage, they are studded with coins, and partly cover the face before strangers.

At Tazi, we were stopped by a chief of the Giljies, who living independently, and under no control, assumes the right of levying toll upon all caravans: the tax is not fixed, but taken according to his own will and pleasure. He was most arbitrary with us, seizing any of our arms to which he took a fancy, and seeming to be much surprised, as well as offended at our attempting to prevent it. The plain about Tazi was the scene of a bloody battle between Shah Zamoon and Mahomed Shah, sons of Timour, and who disputed the throne of Afghanistan; the former in losing the battle, was also deprived of his eye-sight by his brother.

A stranger in passing this country on the approach of winter, would remark the number of poles erected in all the villages, and to which are suspended the carcases of sheep, salted and hung to dry, as their food during this season; which practice they probably learnt from their neighbours.

The village of Mokur is situated close under the southern face of the Goolkun chain, which defends it from the strong wind of the north; near the village is the source of the Turnuk river, and in which are found plenty of fish of a good kind.

The people of this hamlet are exceedingly obliging, lodging all strangers in their houses, and their cleanliness, so unusual in the East, would make one fancy they were settlers from another country. Six coss beyond the hills, which border the plain towards the south, is the salt lake of Zourmal.

From Mokur we continued our journey to Guzni. In traversing the plains of Kuzabak and Nani, in advance of this, the country is covered with numbers of small villages, each enclosed by a mud wall with small towers at the angles; this manner of protecting the villages is very common in Asia, but above all, in Afghanistan, where the number of civil wars that have constantly taken place, have rendered this mode of defence necessary; as in case of danger, it offers a place of refuge, and enables them to keep what they possess in safety.

Before arriving at Guzni, the conductor of our caravan receiving very discouraging accounts of the state of affairs of the country before us, judged it prudent not to halt there, but turned aside and took the caravan to his own village, which is about six miles from this city. My friend Avitable and a few merchants, who preceded the main body, not being aware of this alteration in our movements, pushed on and slept that night at Guzni. The next morning at day dawn, we were surprised to see several horsemen enter the village, whose sinister appearance boded us no good, and shortly after, they were followed by another party that possessed themselves of all the outlets of the place. By order of their chief, we were seized, our arms and property taken from us, and the caravan and every person belonging to it conducted to Guzni. On our arrival there we were made to enter a caravanserai, a strong guard put over us, and our effects removed to another place, and had to undergo a rigorous search to ascertain if we had anything secreted on our persons. What surprised me most, was to find that they took no notice of my papers, which I carried about my person in the way Asiatics usually do, and which gave me reason to believe, the vagabonds were only anxious to secure our money. The few sequins found upon me, were seized with great delight. Fortunately, before quitting Candahar, we had exchanged our money for bills upon Cabool, given to us by a merchant, to whom I had been particularly recommended by some acquaintance at Herat, without which, my friend and myself, would have been put to great distress. The next day I was taken before the governor of Guzni, who strictly questioned me as to who I was, from whence I came, and to what place I was going. I answered him readily, and with confidence, that I was a Georgian on my way to India, in search of one of my relatives. On this he commenced bantering me, wishing me to understand, that he was aware of my being an European; he then made me open out all my papers, and shewed me some mathematical instruments and my watch, that had been found with my effects, asking me to tell him the use of them. I pleaded ignorance, and said, that they had been given to my care by an Englishman at Tehran, to be delivered to a friend of his in India. On this he became very serious, desiring me under pain of the severest punishment to tell him where I had secreted my money. I answered him, that having been made a

prisoner, searched, and all my effects taken from me, that I had nothing more in my possession; this seemed to satisfy him, and I was dismissed, under a strong escort, to the caravanserai, where I had the pleasure to find my friend, whom I found had been questioned as well as myself. Our accounts of ourselves were found totally, as before leaving Ispahan, we had agreed upon what should be said, and had also instructed our servants.

That night we concerted measures to attempt our escape; we could hit upon no other plan than that to despatch the servant to Cabool, that our "companions in arms" had sent us from India. He was to find out Nawab Jubbur Khan, brother of the rulers of Affghanistan, and with whom, our friends were on intimate terms, who no doubt would interest himself in our favour. As a further measure of prudence, my friend Avitable determined, if possible, to escape and accompany him; taking advantage of our people being absent with the horses to water, he scaled the walls of the caravanserai, and contrived to secure two for himself and servant, and managed to effect his escape.

Eight days after, I was agreeably surprised at the governor sending for me, overwhelming me with apologies for the treatment I had received, and reproaching me for having disguised from him the truth. I at first thought it was a trap he had laid for me, but I soon felt myself at ease, when he presented me with a letter from my friend. From this time, he was kind in his attentions, restored all my property, and started me for Cabool, where I arrived the 13th of November. I took up my abode with the noble Nawab Jubbur Khan, (where I found my friend Avitable,) and whose kind hospitality soon made me forget all the privations that I had lately suffered under his brother.

There are four stages for caravans from Guzni to Cabool; their names are Chesgos, Shekabad, and Maidan: before reaching this latter, you have to cross a small clear stream, which comes from Azercs, and which after fertilizing the valley of Languered, falls into the Cabool river at Maidan. You come upon a river which is that, that runs to Cabool. From this the line of road to Cabool is well adapted to defensive operations, but it might be turned, if the precaution was taken of marching from Guzni by Goidez and Longerd. It was at Shekabad that Futteh Khan was put to death. Kamran Shah having a hatred to him, took advantage of his defeat at Kaffir Kola, to deprive him of his eye-sight; but

not satisfied with this revenge, he subsequently had him put to death at this place. This man's fall is still regretted by the Affghans, who speak in terms of praise of his courage, and the able manner in which the affairs of government were conducted under him. Borna Barikzye preserved amidst all his greatness, the simple manners of his tribe, which won the hearts of all about him. To this was added an unbounded liberality. At his death his brothers, to the number of twenty-one, and who were almost all in high situations, revolted; called around them the tribe of Barikzyes, of which they were the chiefs, and assumed supreme power in dethroning Mahomed Shah. Since that time they have divided amongst themselves the provinces of Affghanistan, which they govern without fear of opposition.

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Extracts from the late Dr. VOYSEY's Journals, when attached to the Trigonometrical Survey in Southern and Central India.

[The Editors have given the present extract, though the last in point of date, the first place, not only from its crossing a tract of country quite unknown, but moreover from its being the volume of the Journal which closes the lamented Voysey's career; this being the journey on which he died on his route from the left bank of the Subunreeka to Calcutta, being brought dead in his palkee to the ghat of Howrah, in a state which shewed that he must have died nearly twenty-four hours previously! The date of the commencement of his fever is noted in his Journal. The specimens collected up to his death are in the Museum.—Eds.]

Mahwilgaon, 11th February.—The soil is entirely black on the surface all the way from Nagpoor. In the bed of the Nag nuddee, I found a great quantity of white felspar, quartz, calcedony and other minerals usually found in trap, the lower part of the bank consisted of a mixture of sand and clay, a very complete separation being visible between the superincumbent black soil and the red underneath. The surrounding country appears to be very rich, and is tolerably well cultivated.

Mahoda, 12th February.—Black soil until I reached Omree, when it became sandy and red, but speedily changed again to the black. Near Mahoda I was attracted by the sound of a water-fall in the Kánhan, and immediately descended its bed. It contained gneiss and granite rock in great quantity, the gneiss porphyritic, containing large crystals of white felspar. Its contractions were very much varied, as

also the inclination of the stratification; its direction was for the most part East and West as usual. It also contained the usual quartz veins parallel to the stratifications. Nearer the town, and lower down the river, I observed singular masses of hornblende slate, succeeding to, and sometimes mixed with the gneiss. I saw also several veins on the left bank of the Káñhan of a decomposing chlorite schist, the contractions of the gneiss were there also very extraordinary and irregular. The most singular rock is the iron clay, which lies on the gneiss on the river bank; I was however unable to discover any connection between the two rocks.

Bundarra, 13th February.—The road as far as Kerbie was over black soil. It then became red, and I observed in my path frequent masses of the red ironstone, but I hesitate yet whether its proper appellation is iron clay; the usual accompaniment of the red soil; viz. numerous tanks which were tolerably full, gave indication of the former riches of the country. I shot a teal with beautiful white eyes in one of them. I was yesterday deceived in respect to the situation of the range of peaked hills near Bundarra. In the Wain Gunga, I found pieces of gneiss, and here and there masses of the main rock jutting from beneath the diluvial soil. There are numerous tanks and fine groves of tamarind trees at Bundarra.

Bundarra, 14th February.—The *sungum* being more distant than I imagined, I stopped half way at a small hill, on which is a temple dedicated to Rama. The rock was gneiss passing into mica slate and clay slate with mica.

Lacknee, 15th February.—The black soil, entirely disappeared, and in its stead is found that arising from the decomposition of gneiss. The main rock is now and then seen in the beds of rivers and nullahs, but always at considerable depth from the surface. Rice is principally cultivated, and the tanks are very numerous.

Sackolee, 16th February.—The same soil, which allows of very fine roads. For a considerable portion it was very red, and I observed at the side of the road, a great quantity of the iron conglomerate in large masses. It appeared to me closely resembling that of Midnapore. I have before observed, that there is considerable difference between the iron clay found in connexion with basalt, though I believe it to be more apparent than real.

Deoree Kessory, 18th February.—The Dullee Ghaut is composed of chlorite schist, with numerous veins of quartz. The direction of the laminae of stratification is N. E. and S. W., and nearly vertical. Deoree Ghaut is composed of red ochraceous clay slate. About a mile from the summit of the Ghaut, sandstone and sandstone conglomerate is seen. The sandstone resembles that of Gellapoorum, as well as the conglomerate that near Anarum.

The next Ghaut called Deoree, is more steep and elevated than that of Dullee. It is about 300 feet above the plain, and in one part is very steep, the rock is red ochraceous clay slate with veins of quartz. A very small portion of the rock is bare, and speedily is lost under the immense deposits of diluvial soil. The change from gneiss to clay slate probably takes place between Lacknee and Vergoonee.

Burra Bunjarra, 19th February.—In the bed of, and on the banks, of the Beg nuddee, I observed large masses of a bluish coloured quartz rock or flinty slate. This appeared frequently, afterwards, crossing the road, accompanied by common quartz rock which was the only rock I observed between that place and Burra Bunjarra. Close to my encampment large masses of the common-bedded granite of India and a greenstone vein, as usual, which I have been able to trace for upwards of quarter of a mile.

The granite is exactly like some Hyderabad specimens, but the green stone vein does not run E. and W. but nealy N. and S. The hill of Worarbund bears nearly due East from my encampment. The water of this place is detestable. If a well were dug it would be better. I am informed that many attempts have been made to procure water, but they have failed on account of the badness of the stone beneath.

Woorarbund, 20th February.—The road lay over granite similar to that of Burra Bunjarra, the masses appearing very rarely from beneath the alluvial soil. At Chichowlee nullah, quartz rock and a trap vein. The hills on each side of the road were of granite, and externally resembled that of Koppa, the bedded masses inclining to the form of tors and logging stones. The new road is impassable on account of the long grass which completely covers it, the old road after several circuitous windings rejoins it two or three times. For three coss after passing Chichowlee, the soil is black. In my immediate neighbourhood is a quartz hill, from it I see the hill near the Beg nuddee,

and in the evening I shall probably see that of Deoree. The quartz is intimately mixed with felspar, which is sometimes found in separate clay slate, exactly resembling in some specimens that of Kerajah last year.

Doorroog, 22d February.—Alternation of black soil and of pisiform iron ore, reminding me of that in the neighbourhood of Sheelapiley. The face of the country as bare and destitute of trees as in the neighbourhood of Sholapoore. In the bed of the Shiwer nuddee, a reddish clay slate, the bed was composed of siliceous sand, and the banks of brown argillo-calcareous soil. In my vicinity are numerous excavations of considerable dimensions for the purpose of making tanks, the bottom about 50 or 60 feet below the surface; in one, S. E. of the town, is a thick layer of limestone of a reddish color, which at first appears to be a kind of breccia or pudding stone, but on narrow inspection, it is evident, that the whole consists of a thick bed of oyster shells which have been in some cases completely petrified, and changed into a compact limestone; and in others on fracture, conchoidal laminæ are very distinct. Perhaps it will be difficult to convince some persons that these are really petrified oyster shells, but I have not the slightest doubt, that an experienced geologist will at once admit of the fact. It remains to be ascertained, whether the rock has a bituminous or ammoniacal smell before the blow-pipe; they appear to differ very little from the shells at Miaglah Condee, except that in this instance they are entire, whereas at the former place, they are broken; here also they appear to have been compressed. The bed extends beneath the diluvial soil as far as the bed of the river, where there are a few scattered blocks.

Ryepoor, 23d February.—In the bed of the Karoo nuddee, I observed the shells, and in one bank, in particular on the right bank of the river, they were particularly distinct, owing to the polish which the stone had received from the friction of running water. The soil alternated from the red or decomposing pisiform iron ore to that of the clay slate and sand.

Ryepoor, 28th February.—On the 24th I visited the Karoo nuddee, about 4 miles S. W. of Ryepoor. The bed of the river was principally formed of the shelly slate limestone, but the masses did not present the same distinct outline which I observed further

up the river. I occupied myself during the day examining the quantity of lime contained in sixty grains, and found it lost 15, which is equal to 25 per cent.

I observed alternations of black and brown soil, but the nullahs did not afford any indication of the substratum. Here and there, however, pieces of the shelly limestone were seen in separate blocks lying on the surface. On inspecting the wells dug by Col. Agnew and Captain Hunter, which were about 50 feet deep, the first rock was the shelly limestone and afterwards a clay slate, with a various admixture of lime decomposing on exposure to rain and sun, the split masses affected the rhomboidal form. To the N. W. of the cantonment there is a large stone quarry. The rock is sandstone passing into clay slate. The sandstone is very slaty, and breaks into rhomboidal pieces; it is easily quarried, and would I think be cheaper than bricks.

Chandcoory, 29th February.—On my road hither, I frequently saw isolated masses of the shelly stone, but in no place the main rock. The soil was alternately black, brown, and pisiform iron ore.

Bhainsa, 1st March.—My course was to-day N. E. by E. over the same kind of soil, and loose masses of the shelly limestone, which are probably transported. All the villages on my road are supplied with water from tanks.

Duttaum, 2d March.—At Sindora, a half-dug well shewed red clay slate, and this was the only spot in which I saw the main rock; nothing else being visible but the brown diluvial soil.

Lowun, 3d March.—The hill S. E. which I saw from Bhainsa is Sonakani; there was formerly a gold mine beneath it; my course is due East to-morrow; my course to-day was N. E. by E. $\frac{1}{2}$ East. This village was formerly very flourishing. It was plundered in the time of Sewajee by the ruler of Sonakani, and has since gradually sunk to ruin. The black slaty limestone, which is spread about in detached pieces in great quantity, is said to lie under the diluvial soil, and is also found on the river Mahanuddee.

Kotinghy, 4th March.—In a nullah near Lowun, black calcareous clay slate, and on the right bank and bed of the river, precisely the same rock. The bed consisted of coarse granitic sand. The course of the river is nearly due North, and is two furlongs wide.

At present the pools are all stagnant, and I did not observe any stream or motion in the water to direct one. The name of the village on the river bank is Kurwa, there is a temple, whose size shews, it was not always in its present ruined state.

Beliagurh, 5th March.—Clay slate like that of Kotinghy in the beds of nullahs, sometimes in the road, and is succeeded by a reddish sandstone. And I have little doubt that were it not for the abrupt disappearance under the brown diluvial soil, that I should be able to observe the same gradual changes I have noticed in the Dekkan. At a village called Kosoola, which stands on a hill of sandstone, the rock was in large masses, and rather slaty, like that at Raupoor; I am convinced that the rocks of this formation are contemporaneous with and prior to the granite. Nullahs have now commenced making their appearance since my approach to the hills. I shall cross the outgoing of the range to-morrow. At Poorgaon, Dallia-puhar, a remarkable peak, and Sonakani, bore, the former North and the latter South.

Tanreepar, 6th March.—I crossed the Pass of Silmar, a little beyond Jora Devi, the ascent is trifling, the road good. At Jora Devi the red granular sandstone. In the Pass, sandstone conglomerate immediately followed by the clay slate and shelly limestone. At Belaipoor the rocks had a most remarkably mottled appearance, arising from large masses of calcareous clay slate enveloped in a paste of quartz, in grains containing small pieces of the same rock; very few of the masses seem much rounded by attrition. The space occupied by the rocks was about a furlong square. At a short distance appeared the usual sandstone followed by the calcareous clay slate. The Pass which I crossed to-day is in the range of hills whence I first got sight of Bhyesah, and as I have been travelling N. E. and E. their course is nearly S. W. and N. E.; the intimate resemblance in outline and structure, with the sandstone hills of the same formation.

I observed no rocks until I reached Sarunghur, where large masses of sandstone were exposed.

Laindurrah, 8th March.—Sandstone appears to be the prevailing rock, however, at the top of the Pass the calcareous clay slate seems most to abound. In the beds of nullahs, the horizontal clay slate is almost invariably seen. It is, generally speaking, the lower-

most rock. The sandstone exactly resembles that of the Silman Pass; in one or two places I perceived sandstone conglomerate, but in small quantity.

Cordeonah, 9th March.—About two miles South of Laindurrah commences the Cootie Calee Ghaut, which is not so extensive as that of Deosir. It is composed of sandstone, beneath which is clay slate, although it is usually exposed in the same manner as at Deosir, between Genowlah and the Pass. After passing over sandstone conglomerate, I came on large bedded masses of granite, which appeared occasionally the whole distance between its first commencement and this place. Its junction could no where be observed on account of the thickness of the diluvial soil. The granite contains a considerable portion of felspar and white mica, the quartz is least in quantity.

Kalapan, 10th March.—Between Ordunnah and Cheereegaon, granite with felspar and white mica. In one spot a trap vein of the usual kind. Near Cheereegaon I observed concentric lamellar granite, similar to that of Hyderabad. It generally appeared in large bedded masses. The bed of the nullahs and rivers were composed of granitic sand.

I observed some masses of the laterite, very similar to those of the banks of the Kanhan at Mahoda. The range of hills, which appear to the Northward, are called the Baruh-puhar; the Maha Nuddee runs on the other.

Sumbulpoor, 11th March.—On my road hither, I frequently observed the granite and the usual trap veins. Shortly after approaching the termination of the Baruh-puhar range of hills, I observed gneiss, which appeared to lie in planes of stratification parallel to the range. These appearances continued as far as the bed of the river, which is covered with masses of gneiss. The bed of the river consists of sand not much comminuted. In this bed the diamonds are sought for; they are found in a black sand below the upper sand. It is said that no diamonds are found in the river above the confluence of the Eeb, and it is supposed that they have their origin in the rocks in that river, or on its banks. The Company have the right of search, and in their hands it is not at all productive. The Rajah of Sumbulpoor offered a rent to the Company for right of search.

Sumbulpoor, 16th March.—I went this day to visit the diamond

mines ; the Rajah's Dewan had told us, that the principal place of search was at the junction of the Eeb river and the Maha Nuddee ; nevertheless we were taken to a place in the bed of the Maha Nuddee considerably below it, and where it runs between a large island, called the Hira Coond, and the prolongation of the Baruh-puhar hills. We passed through a continued extent of forest land, in which I observed the ebony tree, the saul, some small teak trees, the Pavetta Indica, the Pulas in full bloom, &c. &c. We crossed the Maha Nuddee to a large island, and after going two miles in a N. W. direction, came to another island, which we soon crossed, and arrived at the huts of the guard and workers of the mines. The miners were at work in the bed of the river, about one mile below this spot. I was informed that they were directed in their search by the presence of a blackish earth under the sand, in which was found rounded pebbles of all sizes, from one foot diameter to one inch. They were principally composed of clay slate, flinty slate, jasper and jaspery ironstone. A bund is formed to stop the water, and the earth which is dug out is carried to a spot where a running stream is made to pass over it. The sand brought down by this means is subjected to search in wooden shovels ; no diamond had been found for a considerable time.

Kutterbugga, 20th March.—Course at N. E. between Sopun and the Gher Gattee. I passed over some argillaceous limestone, which in one place bore a slaty character ; the Pass of Gher Gattee is composed of quartz rock. In several places on my road, I observed laterite, but could no where discover its connexion with the rock beneath. My course was N. E.

Somasinghur, 21st March.—In the beds of all the nullahs I observed gneiss, also I frequently came on lumps of the laterite, but never observed its connexion with the gneiss. The soil is for the most part sandy.

Chippadhee, 23rd March.—Considerable quantities of hornblende schist in the nullah, evidently subordinate to the gneiss.

Kotooniah, 25th March.—The gneiss in some places passes into a mica schist, and contains moreover numerous beds of hornblende schist, and a few of quartz rock. This and clay was not so frequent, as I have before observed it.

Raootpalee or Hatteebar, 28th March.—The road was very uneven,

and stony, and the turns very numerous to ascend the ravines ; the rock gneiss passing into mica schist with numerous veins and beds of quartz rock. The latter part of the Jam Ghattee Pass is of hornblende schist, without any admixture of either felspar or quartz. Nothing can be more erroneous than Arrowsmith's map, as it stands at present. The dip of the gneiss is Southward, and the plane of stratification E. and W.

Chunoah, 2d April.—At Oargah, the gneiss is laid bare to a considerable extent. In the bed of a nullah, I observed several quartz veins.—To Direcola is through a very deep forest without any cultivation, except in a small spot near Direcola. The rock is gneiss hornblende schist, and quartz rock repeatedly alternating.

Cheekurdurpoor, 3d April.—The rock around this place is gneiss, with a considerable quantity of quartz intermixed.

Sureekela, 6th April.—On the road from Kishenpoor I saw gneiss in the beds of all the nullahs, and a kind of clay stone lying in a bed in the gneiss near the Soonjee ; this change is analogous to that which takes place in the granite at Hyderabad, from green-stone into the potstone. Numerous large beds and elongated veins of white quartz ; it is not improbable that metalliferous ores exist in this rock. It has been found the richest in metals of all the Indian rocks. At Callastry it contains lead ore mixed with silver ; at Nellore, copper ; at Nagpoor, manganese and lead ore and copper ; micaceous iron ore is a very common product of this rock. The iron clay which I observed at Mahoda, and in many places along the great road, has not been seen since I left Sumbulpoor. I did not stay long at that place to ascertain its habitat ; but I was informed that it was found on the summits of some of the hills in the vicinage. From the facility with which it is wrought and its durability, it is always preferred to other materials ; great part of the building in forts at Sumbulpoor is of this stone.—At Suraukbela, granite exactly resembling that found in some parts of the province of Hyderabad.

Ighull, 7th April.—Granite, of the lamellar kind sometimes passing into gneiss is the universal rock intermixed with beds of quartz rock, and the greenstone veins and beds. In one part I observed a large grained decomposing granite, composed of large amorphous crystallizations of white mica, felspar and quartz.

Bapmara or Bagmara, 8th April.—I came over the concentric granite passing into gneiss, and numerous trap veins. The tank water here was remarkably bad.

9th April.—Cooliana, left bank of the Soobunreeka, I passed a large nullah. In this short march of only nine miles, I passed large masses of quartz rock lying in gneiss and mica schist, and found in the bed of the river Soobunreeka, mica schist, with large veins of hornblende rock and greenstone.

Cooliana, 10th April.—I found the rocks of the Ghaut were mica schist, with veins and beds of quartz rock.

Dhadka, 11th April.—I passed through the village of Narsingpoor, where the manufactory of the chlorite schist into cups and plates is established; the stone is found in the neighbouring Pass of Narsingpoor. I purchased one small cup for 5 pice; they are first of all cut into their proper shape with a chisel and knife, and subsequently turned; many are spoiled in the first part of the process. The Pass of Narsingpoor, already about 300 feet above the village, is composed of mica schist passing into clay slate. I observed this rock the whole distance to Dhadka, containing veins and beds of white quartz.

12th April.—Rocks of Coliapal. The same mica schist with quartz veins. One specimen of quartz reminded me of axinite.

Geological Remarks during the March from Benares (Old Road,) via Hazareebaugh, Bankoora and Burdwan to Barrackpoor. By Dr. J. Row, B. M. S.

After crossing the Soane river at the village of Baroon, situated on its right bank, marched through Nourungabad to the village of Munurpoor, close under a range of low hills, composed of grey granite; passed next through Sherghatty and Ghurwya, during which stage passed over an undulating country, with here and there masses of granite peeping above the surface. Range of hills running East and West, about a mile distant from the village. We next proceeded to Kanachuttee fourteen miles, during which march we ascended the Dunghye Pass, ascent about five miles, composed entirely of gneiss from bottom to top.

From Kanachuttee to Penarkoon, near the encamping ground, found micaceous sandstone, very friable and slaty, also the same rock in a little declivity towards a nullah S. E. as well as in the nullah, and hornblende rock. Thence to Kutkumsandy at the 25th mile stone, during this stage, at about five miles from camp, reached the village on the right called Dewuree, near to which had to cross the Bulbul River, about 100 yards in breadth. On the left bank, at about 50 yards distant, is a hot spring, situated about twenty feet above the river ; water bubbled up when a stick was inserted, and appeared to be about the temperature of 115° or 120° ; but I had not a thermometer at hand to prove it. Taste sulphureous and slightly salt, and emitting a sulphureous vapour. Bed of the river ankle deep, and a small stream at this season (February) with rather precipitous banks. Ascent nearly the whole way. About half way, met with greenstone and hornblende slate, quartz rock was greenish grey and compact and porphyritic in the bed of the Bulbul, with patches of red, light and dark, resembling jasper. The rock behind the village of Kutkumsandy and bed of the nullah composed entirely of gneiss.

Our next stage was to Hazareebaugh. At three miles from encamping ground commenced the ascent of the Kutkumsandy Ghaut, distance about three miles from bottom to top. Rock composing the Pass consisted of gneiss at the top, quartz rock abounded, coarse and fine grained, advancing into the table land, quartz rock seen in every direction from Hazareebaugh to Deigwa, ten and three-quarter miles. At about three miles from Hazaree began to descend gradually. Passed some detached hills half-way, of gneiss, also in the beds of the nullah ; but further on, on the higher parts, white quartz rock appeared. About half a mile from Deigwa found a steep hill consisting entirely of crystallised quartz rock, of white and rose color, separate and mixed in layers, which was very beautiful. The bed of the nullah at Deigwa was composed of gneiss.

We next proceeded to Chuttroo Chuttee, thirteen and a half miles. Road very undulating all the way, some of the ascents very steep ; crossed a Pass called the Tootkee Ghaut, up to a telegraph close to the road, about a mile and a half in length. In the Pass found gneiss fine grained and light coloured. The surface of the country covered with quartz rock and gneiss. The beds of the nullahs also consisting

of gneiss and hornblende, and the substance No. 2, which Mr. Piddington has found to be corundum, and on some heights on the left, about half way to Chuttroo, I found in large quantities quartz rock with corundum (No. 4.) of pure white and greenish grey color imbedded.

In a nullah at Chuttroo running S. to N., the bed formed of contorted gneiss, and containing large plates of mica, and here and there hornblende. Inclination East to West. It is as well to mark, that there was a short avenue of trees at the entrance to Chuttroo from the Deigwa side.

From Chuttroo to Goomea thirteen and a half miles; encamped here; the dak bungalow at the two-hundredth mile stone. Crossed in this stage six wet nullahs, and came down the Tilla Pass; gentle descent the whole way. The surface of the hills covered with quartz, bed of the nullahs and declivities shewing coarse gneiss with large proportion of mica. At the village of Goomea, the higher places covered with strata of coarse and fine grit stone, containing portions of felspar and mica; also micaceous sandstone at the dak bungalow; a range of hills West of camp three koss, called the Soogoo range, and one hill N. E. visible since leaving Hazareebaugh seven koss from hence, called Parisnath, at the foot of which is said to be the town of Palgunj. Went to the bed of the Borako river, one mile South, which emerges from the Soogoo range, and during its course brings down specimens of coal, as both that mineral and black micaceous sandstone and shell were found in rolled specimens in its bed. The ravines running into the river, and its bed, faced with strata of sandstone, as if done by art.

The next stage was Augbalee, thirteen miles, at the one hundred and eighty-seventh milestone.

From Goomea descended into a steep nullah with little water, and about one and a half mile crossed the Borako river; five miles further over rather even country, but descending gradually, crossed the sandy bed of the Damooda river, thence to Augbalee six and a half.

The surface of the country covered with quartz rock; one of the nullahs half way between the Damooda and Augbalee, contained hornblende rock and greenstone, with veins of quartz and some mica. The rest consisted of gneiss.

A hill immediately S. of the bungalow consisted of gneiss, the ingredients of which are all white. Mica, quartz and felspar, also at the base, some blocks of foliated quartz.

The bed of the nullah below had beautiful vertical and horizontal strata of gneiss, with veins of greenstone and white and red quartz and felspar. Inclination of strata E. and W. across the nullah. In this nullah were found specimens of No. 2, which Mr. Piddington has named a variety of corundum.

We next proceeded to Chass, fifteen miles, encamped West of the bungalow, between that and the nuddee. In the ravines S. of camp and opposite side of the road, the ground strewed with beautiful masses of quartz crystals and foliated quartz combined. Some very large masses. In the nullah West of camp 200 yards, found the same beautiful varieties of gneiss, and containing large blocks of foliated quartz. In the bed of the nullah, the strata were as it were uplifted, turned vertically, while those on the banks were horizontally placed. Between camp and the nullah off the road on the right came upon the commencement of a tank, and found large quantities of large and small masses of globular greenstone.

From Chass passed through Chundunkeearee fourteen miles, to Dobra twelve miles; the country became generally flat and level, with here and there granite rock above the surface. The beds of the nullahs containing gneiss, about four miles before reaching Dobra, but with a rock of greenstone at the foot of which was a telegraph tower. The encamping ground at Dobra covered with quartz and mica, and here and there patches of gneiss, and in the bed of a tank which was digging near the village, the red clay contained enormous quantities of mica schist, containing crystals of schorl in large proportions, this schist was quite soft when removed from the soil, and became speedily hard on exposure to the air.

At Rugonathpoor, ten and three-quarter miles further over a flat country, with here and there rocks of gneiss, encamped under the Rugonathpoor hills, three or four conical-shaped masses of bare rock, consisting of gneiss, at the foot of which is the town, large and populous.

Some rocks between Rugonathpoor and Siljam, twelve and three-quarter miles, here gneiss with veins of hornblende.

We next proceeded to Chatna thirteen and a half miles, on the road, the beds of the nullahs contained some dark coloured gneiss, with greenstone here and there, and the surface of the country quartz rock.

At Bankoora found gneiss in patches above the surface, and in some ravines North of cantonments found nodules of iron clay, (laterite,) with blocks of crystallized quartz rock in an apparently vitrified state, and of a grey color.

The iron clay was also seen in the next state from Bankoora, viz. Bulleatore, and also in one or two places gneiss.

ROUTE.

Miles.

Sherghatty,..	to	
Ghurway,..	12	cross the Boorun and Fulgo rivers.
Kanachuttee,.. . . .	14 $\frac{3}{4}$	ascend the Dunghye pass.
Penarkoon,..	8 $\frac{3}{4}$	
Kutkumsandy,	9 $\frac{1}{4}$	cross the Bulbul river.
Hazareebagh,	12 $\frac{3}{4}$	ascend the Kutkumsandy pass.
Deigwa,	10 $\frac{1}{4}$	
Chuttroo Chuttee,.. . . .	13 $\frac{1}{4}$	descend the Tootkee pass.
Goomea,.....	13 $\frac{1}{2}$	down the Tillia pass.
Augbalee,..	13 $\frac{1}{4}$	ford the Borako and Damooda rivers.
Chass,.....	15	
Chundunkeearee,.. . .	14	
Dobra,.....	12	
Rugonathpoor,..... . .	11	
Siljam,.....	13	
Chatna,..	13	
Bankoora,.....	9	

A Geographical Notice of the Valley of Jullalabad. By Capt. G. H.
MACGREGOR, C. B.

1. The country which is subject to the control of the Governor of Jullalabad is the valley of the Cabul river, but it is generally termed Ningrahar, or Nungnihar, the former being a corruption of the latter word, which signifies in the Affghan language nine rivers, or rivulets, and has reference to those by which the valley is intersected.

2. The Khybur mountains cross the valley at its eastern end ; the snowy ridge of Soofaid Koh forms its Southern boundary ; the hills of Kourkutchha, and Seah Koh, and the desert of Gumbeer, trace its Western limits ; and on the North it is bounded by the primary and inferior ranges of the Safee and Momund hills, which are separated by the Coshkote river.

3. The Cabul river flows through the Northern part of the valley, and its direction is East by South, and West by North ; on its left bank from Lalpoorah to Kama, a distance of about thirty-five miles, lie the Momund, (Be-doulut) hills ; in some places they form ridges which advance and overhang its banks, and then bend back and form the plains of Goshta and Kama : at the confluence of the Hoshkote and Cabul rivers, the valley opens out to the North, and forms the fertile districts of Shiwh Shegee and Beysoot ; the two latter are divided by a low ridge of barren hills, called Tunjee Phagoo. The Northern boundary of Shiwa, which skirts the Safee hills, may be estimated at fifteen miles from the left bank of the Cabul river, and the mean width of these districts, limited on the East by the Koshkote river, and on the West by the Gumbeer desert at six miles. This part of the valley is not generally considered as belonging to Nungnihar, but as it bears on the Koshkote river, which is one of those that give origin to the term, it seems to me to be very properly included under the denomination

4. On the South side of the Cabul river are the plains of Jullalabad, Chardeh, Butteekhote, Besh Boolay and Dukka,. The first mentioned are divided by the Alec Boghan hills, termed by the natives ' Soorkh Dewar ;' these cross the valley, and form a low connecting ridge between the Momund hills and the Soofaid Koh. The plain

of Butteekote is joined on the North by that of Chardeh, and the country to the South of it, and of the plain of Jullalabad, slants up to the base of the Soofaid Koh. Besh Boolay is included in this highland, which Lieutenant Wood of the Indian Navy, describes as embracing all the rough and broken ground between the Khybur and Kurkutcha ranges, and estimates its length at fifty-nine miles, and its mean width at fifteen.

5. The small plain of Dukka lies on the Western entrance of the Dukka. Khybur pass; the Cabul river marks its Northern boundary; it is enclosed on all other sides by the inferior ranges of the Khybur hills (Khoord Khybur); the high road from Dukka to Jullalabad defiles Westerly through the hills, and at the narrow part of the pass, a Thanah of Momunds is stationed for the protection of travellers; on debouching from the defile the road leads out on the Geerdey country, passes on to Huzurnow and Bersawul, and opens out on the valleys of Butteekote and Chardeh.

6. The plain of Butteekote is little else than a stony desert; that of Chardeh is more fertile, on the North of which flows the Cabul river. Mar Koh, or serpent hill, limits its Eastern boundary; on its West are the Alee Boghan hills, and South lies the Butteekote desert; its length may be estimated at nine miles, and mean width at three and a half.

7. To describe the plain of Jullalabad, I will quote from Lieutenant Wood's report on this part of the country, submitted to Government in 1833.

“A ridge of hills called Deh Koh, or the black, rises about Jug-dulluk, and running East by North till it meets the Cabul river, bounds the plain of Jullalabad on the North; to the South it has the highland of Nung Nuhan; East it has the hills of Alee Baghan and desert of Butteekote, while its Western limit is marked by ridges which here project into the valley of the Soorkh Rood.

“The length of the Jullalabad plain is twenty-five miles, and its width does not exceed four miles. A plain situated so high up the temperate zone, with snowy mountains in sight on the North and South, producing all the vegetable productions of a more Southern clime, is one of those exceptions, resulting from local influences, that are often found to militate against received opinions regarding climate.

From Jullalabad to Gundummuk, the distance is twenty-eight miles, and the difference in the elevation of the two places is 2330 feet, the former being 2170 feet above the sea, and the latter 4150. Travelling from the plain of Jullalabad, the change from a hot to a cold climate is first perceived at Gundummuk; so sudden is the transition that natives affirm it snows on one side, while rain falls on the opposite."

8. The following rivers intersect Nung Nuhan:—

1. The Soorkh Rood, or red river.
2. The Gundummuk ditto.
3. The Kunerssoo ditto.
4. The Chipreal ditto.
5. The Hisaruk ditto.
6. The Kote ditto..
7. The River of Momund Durrah,
8. The Kashkote, and
9. Cabul rivers.

9. The Soorkh Rood rises in Bara Koh, flows through the Hisarut Soorkh Rood, district, joins the Gundummuk river at Tuttung-i-Mahomed Acbar, and falls into the Cabul river at Durrounta; it is called the red river, from the colour of its water; it is fed by tributary streams at Tootoo, Baghwanee, Tuttung and Bala Bagh. The Soorkh Rood is not navigable.

10. The Gundummuk river rises in the Soofaid Koh; it is joined by streams from Moonkhee Kheil and Koodee Kheil, Gundummuk River. it flows by Gundummuk, and falls into the Soorkh Rood; at Killa Alladad Khan it is not navigable.

11. The Kurrussoo river rises in the Soofaid Koh, runs through the Kurrussoo River. valley of the Wuzzeeree Khoogeeance, passes Kujja, Behoor, and Futtehabad, and flows into the Soorkh Rood close to the town of Bala Bagh.

12. The Chippreal river rises in the Soofaid Koh, a little above Chippreal River. Puchhea, flows by Agan, Chipreal and Heidah, and joins the Cabul river about four miles to the Eastward of Jullalabad, at Serai-i-Khoosh Goombuz.

13. The Hisaruk like the rest rises in the Soofaid Koh, above Muzeena,

Hisaruk River. runs past Hisarshaee, Burroo and Bareekal, travels on to Chardeh, and sinks into the Cabul river at Lachoopoer.

14. The Kote river rises in the Soofaid Kote, its course is by Khun-

Kote River. der Khanee, Butteekote, Chardeh, and falls into the Cabul river at Killa-i-Khalid Khan.

15. The river of Mumund Durra rises in a valley from which it takes

Mumund River. the name, and which is situated among the inner ranges of Soofaid Koh. This river flows past the Nazeean valley,

and the Sheinwaree forts of Besh Boolaly ; it branches into two streams near Busawul ; the larger one falls into the Cabul river at Busawul, and the smaller one flows in the direction of Huzarnow, and exhausts itself on the cultivation appertaining to that place. This river forms the limit of the Cabul valley on the south-eastern side, paying revenue to the Government.

16. The Kashkote river is said to rise near the source of the Oxus ;

Kashkote River. it flows through Kashgar, Chughurserai, Koonur and Kashkote, and joins the Cabul river near the village of

Kama. During the summer on the melting of the snow of the Safee mountains, this river is not fordable ; timbers are floated down from Chughurserai, Koonur and the Safee valleys to Jullalabad. Rafts of inflated cow hides also float down the river, bringing grain, iron and other articles, supplied from the Bajore and Koonur countries.

17. The Cabul river in its course receives several considerable

Cabul River. rivers, the Punjsheer, Ghorebund and Loghur streams ; besides those intersecting this valley are its tributaries ;

in summer it flows with great violence ; it is fordable only from November to April. Rafts of inflated hides float with the current, and convey people and goods from Jullalabad to Peshawur. Rafts cannot stem the current. On the journey down the river being accomplished, the raftsmen take the hides out of the water, allow the inflated air to escape, pack up the hides, and return with them by land, either laden on jackasses, or upon their own shoulders.

18. These streams, with the exception of the Soorkh Rood, Kaskote and Cabul rivers, are more properly termed rivulets ; they are chiefly fed by the melting snows of the Soofaid Koh. Canals conduct their waters over the country through which they flow, and spread fertility

wherever their influence extends. Several of these streams during the summer at the period of the rice cultivation, are exhausted before they reach the Soorkh Rood, or Cabul river, to either of which at other seasons they form tributaries.

19. The distance of Dukka to Soorkhal, by the high road, is 77½ miles, *vide* subjoined table of routes furnished me by Captain Paton.

20. The low hills of Jullalabad are extremely barren, but the lofty ranges of Koond, Kurkutch, and Soofaid Koh, are richly clad with pine, almond and other trees, which supply the market with excellent timber.

21. The highest peak of Speenghir, or Soofaid Koh, is stated by Lieut Wood at 14,100 feet above the level of the sea. The same officer talking of the people who inhabit the hilly country, says,

"To see a stream well conducted along the face of a hill, 25 feet above the mean level of the valley below is not uncommon, and where no rivulets intersect the valleys, a running stream is procured from *karezes* or wells. The appearance of these sequestered valleys is a mixture of orchard, field, and garden. They abound in mulberry, pomegranate and other fruit trees, while the banks of their streams are edged with a fine healthy sward, enamelled with a profusion of wild flowers and fragrant from aromatic herbs; near the forts they are often fringed by rows of weeping willows."

22. The plains of Butteekote, Geedee, Goshta, Chardeh, Lookee and the country skirting the hills, afford good pasturage. The pastoral Ghilzies bring a great number of camels and sheep to these districts in autumn, and return to Cabul in the spring.

23. The principal towns and villages in the valley are,

Jullalabad,	Huzanow,
Sooltanpoor,	Busowul,
Bala Bagh,	Lalpoora,
Char Bagh,	Gurdee,
Futtehabad,	Goshta,
Neemla,	Sun-i-Serai,
Gundummuk,	Kameh,
Kujja,	Shewah,
Heidah,	Killatuk,
Besh Boolay,	Shegee.
Butteekote,	

On the North of Nungnihar lie the countries of Noorgul, Kooner, Chughurserai, Bajore, Kashgar, &c.; on the West, Lughman and the Ghilzie country; on the South, Bungish and Koorum; and East lie the Khyber and Upper Momund country.

History.

1. As far back as A. D. 977, we find that Mingnihar was the scene of contention between Sabuctagi the Tartar, who assumed the History. title of Nasir-ood-deen, and Jaipal the Brahmin Prince. History mentions that their armies came in sight of each other on the confines of Lungán now called Lughman; and the present village of Futteh-i-abad is said to mark the spot where a victory was gained by Subuctagi over the Hindoo Prince; his subsequent defeat and imprisonment took place at Peshawur.

2. Sooltan Babur in his memoirs, thus mentions Nungnihar, in the year A. D. 1504:—

"Nungnihar," he says, "in many histories is written Nekerhar. The residence of the Darogha or Commandant of this district is Adinapur. Nungnihar lies on the East of Cabul, thirteen farsangs of very difficult road. In three or four places there are some very short *kotuls*, or steep hill Passes, and in two or three places there are narrows or straits. The Khiratchi and other robber Afghan tribes infest this road with their depredations; there was no population along this road until I settled Kuratur below the Kurruksai, which rendered the road safe. The *gurmsil* (or region of warm temperature,) is divided from the *sersil* (or region of cold temperature,) only by the steep Pass of Badam Ches-meh. Snow falls on the Cabul side of this Pass, but not on the Ku-ruksai and Lamghanat side; the moment you descend this hill Pass you see quite another world. Its timber is different; its grains are of another sort; its animals of a different species, and the manners and customs of the inhabitants are of a different kind. Nungnihar has nine streams. Its rice and wheat are excellent; oranges, citron, and pomegranates are very abundant, and of good quality. Opposite to the fort of Adinapoort to the south on a rising ground, I formed a Char Bagh (a great garden,) in the year 914, A. D. 1508. It is called Bagh Vafa (the garden of fidelity,) It overlooks the river which flows between the fort and the palace. In the year in which I defeated

Behar Khan, and conquered Lahore and Dibulpoor, I brought plantains and planted them there; they grew and thrived. The year before I had also planted the sugar-cane in it, which thrrove remarkably well. It is on an elevated site, enjoys running water, and the climate in the winter season is temperate; the garden is charmingly laid out. To the South lies Soofaid Koh, which separates Bungush from Nungnihar; nine streams descend from the mountain, the snow on its summit never diminishes. On the skirts of the hill there are many airy and beautiful situations. On the south of the fort is Adinapoor. The tomb of the holy Lau, the father of Nuh, is in the Toomán of Alishung. In some histories, the holy Lau is denominated Lamek and Lamekan. The people of the country have a general practice of changing the letter of Kaf into Ghain, and it seems very probable that the name Lamghan originated in that circumstance.

"The Toomán of Nughnihar, Manderam Dereh Noor, Dereh Kooner, Noorgie and Cheghurserai I gave to Nasir Mirza.

"I marched from Jumdoor for the purpose of attacking Bajore.

A. D. 1519. Jan. 3d. Having encamped near it, I sent a trusty man to require the Sooltan of Bajore and his people to submit and deliver up the fort. That stupid and ill-fated people refused to do as they were advised, and sent back an absurd answer. I therefore ordered the army to prepare their besieging implements, scaling ladders and engines for attacking fortresses. The preparations having been completed, it was luncheon time when the tower was breached, immediately on which the assailants drove the enemy before them and entered the tower. The men of the main body at the same time also mounted by their scaling ladders and entered the fort. By the favour and kindness of God, in the course of two or three hours, we took this strong castle (Naogee.) As the men of Bajore were rebels to the followers of Islam, and beside their rebellion and hostility, they followed the customs and usages of the infidels, while even the name of Islam was extirpated from among them, they were all put to the sword, and their wives and families made prisoners. I bestowed the country of Bajore on Khwojeh Kilan.

"In the hill country all the inhabitants are Kafirs. In Kafirstan grapes and fruits are extremely abundant, and it produces a great quantity of wine, but in making they boil it. In the hills of this

district, they have the pine, the jilguzeh, the oak and the mastic tree in great abundance.

"I embarked on a raft, and passing the strait of Daronta, landed
 A. D. 1520, higher up than Jehannumah; we went to the Bagh-i-
 January 7th. Vafā, which is opposite Adinapoor; Kiam Urdooshah,
 the Hakim of Nungnihar, met us as we landed from the raft."

In the events of the year 1525, Babur writes on the 8th of Sefer, (Nov. 24th.) "In halting at Gundummuk I had a severe defluxion,* but by the mercy of God it passed off without bad effects. On Saturday I halted at the Bagh-i-Vafā, where I was forced to wait nine days for Hoomaiun and the army that was with him; the garden was in great glory, it is a charming place, the few days we staid there, we drank a great quantity of wine. On Sunday the 17th Hoomaiun arrived; that evening we marched and halted at a new garden, which I laid out between Sooltanpoor and Khwajeh Rustam.

"On Wednesday we marched thence, when I embarked on a raft, on which I proceeded down the river, drinking all the way till we reached Kosh Goombuz, where I landed and joined the camp." Babur proceeded to Peshawur (Begram.)"

In the year 1570, Jullaloodeen Mahomed Akbar Badshah, when proceeding from Cabul to India, desired Shumshoodeen Khafee to build the towns of Jullalabad and Attock, and which were completed in two years. His son Selim, (Jehanghir,) was for some time acting governor of Jullalabad.

The historian Abdool Kadir Budwanee, in confirmation of the above, states; "On the banks of the Nila, Akbar Badshah desired the town of Jullalabad to be built: about three coss from the town is the Bagh-i-Sufa, commonly called Char-Bagh, formerly known as the Bagh-i-Vufā, made by Sooltan Babur, near which was Adinapoor, the place where the governor resided." The same author says, that Nungnihar in former times was known by the name of the Joo-i-Shaee.

During Shah Jehan's reign, that monarch made some additions to the town. The following is an inscription on a marble slab taken from an old fort, and placed in the principal Musjid of the town,

* A complaint very prevalent in the summer of 1840, among the British troops at Kujja and Gundummuk.

shewing that the fort was built by Itimam Khan, in Shah Jehan's reign, A. D. 1638.

بِحُكْمِ شَاهِ جَهَانِ اهْتَمَامِ خَانِ جَوْنَهَادِ
 بِرُوْيِ سَاحَتِ دِيرِينِ بَنَى خَيْرِ مَالِ
 زَأْسَمَانِ زَمَانِ تَأْثِيرِ بَوْدِ بَيْداِ
 مَبَادِ خَوْبِيِّ اِيْنِ قَلْعَةِ درِشَكْنَجِ زَوَالِ
 حَسَابِ سَالِ بَنَايَشِ زَعْقَلِ مَيِّ جَسْتَمِ
 نَدَا رَسِيدَ بَگُوشَمِ بَنَى فَرَخَ فَالِ

* ۱۰۵۱۵ سنَة

In the year A. D. 1735, Nadir Shah sent Sooleeman Yeesawul, (stick-bearer,) from Cabul, at the head of a mission to Mahomed Shah of Delhi. On the fifth day Sooleeman and his party reached Jullalabad. Abaidoolah, the son of Meer Abas of Kooner, whose power extended over the whole of Nungnihar, desired Sooleeman to be slain, and he was killed with much cruelty. Nadir Shah on hearing of the treatment that Sooleeman had met with, immediately left Cabul with his army and marched to Gundummuk, via Chareekur, Nepal and Tugon, thence he sent on to Jullalabad, sirdars Jillayer and Vyaz with the vanguard. Abaidoolah evacuated Jullalabad and fled to Kooner; he was pursued by the sirdars, he fled to Swat, many of his followers were slain, and his sister and women made prisoners and brought to Nadir Shah.

The monarch with his main army went from Gundummuk (where

* The translation of the inscription is as follows:—

Under the orders of Shah Jahán, Ibtam Khan laid, this (stone)
 On the face of the field of antiquity as the foundation of prosperity and wealth.

As long as the signs of the Firmament shall remain extant
 Let not the fairness of this Fort be doomed to suffer from the pressure of destruction.
 I was searching within my mind the Era of this foundation.
 A divine voice struck my ear, saying, *the foundation of good Omen.*

The numerical value of the letters composing the words, (*the foundation of good omen,*) added up make the date of the building A. H. 1054, corresponding with A. D. 1638.—Eds.

he describes the water to be good, and the air delightful,) to Behar; thence to Jullalabad, where he remained only 31 days; his sirdars meanwhile having captured Kooner and Bajore, he proceeded via Chara to Peshawur, where Nasir Khan, the governor, submitted without making any defence.

To enumerate all the important events which have taken place in this district since that period would take up too much space. I will only briefly allude to a few of them.

On the 10th of Sept. 1801, Shooja-ool-Mookl marched from Pesha. A. D. 1801. wur to attack Cabul. At Heshkan he found Mahmood's force, consisting of three thousand men, drawn up, the Soorkhrood being in their front. Elphinstone thus describes the battle. "Shooja had at this time at least 10,000 men, but they were Burdooranees, and though accustomed to the battles of their clans, they were strangers to discipline and to regular warfare. Shooja's armies were at first victorious, but his Burdooranee troops eager to profit by the confusion, quitted their lines as soon as they thought the victory decided and began to plunder the royal treasures, which Shooja had imprudently brought into the field. Futtéh Khan seized this opportunity and charging at the head of his Baurikzyes completed the confusion in Shooja's army. The battle was now decided, and Shooja escaped with some difficulty to the Khyber."

In the year A. D. 1809, June 29th, Shah Shooja sustained another defeat at Neemla when opposed to Mahmood Shah and his Minister Futtéh Khan. Akram Khan, Shah Shooja's Prime Minister, was slain in this battle. Shah Shooja fled over the mountains South of the Khybur Pass to Hisaruk.

On Zuman Shah's defeat near Sireeasp, he fled to the Jullalabad valley, and stopped at Mollah Ashik's fort, which is on the Chipreal rivulet, about 14 miles from the town of Jullalabad, near the Soofaid Koh; "the Moollah received them hospitably, but took means to prevent their escape, and sent off a messenger to Mahmood Shah. Shah Zuman during his confinement, secured the Koh-i-Noor with some other jewels in the wall of his apartment, which were afterwards found on Shooja's accession." (Elphinstone) The poor monarch was blinded on his road to Cabul, by piercing his eyes with a lancet.

On Shah Shooja being restored to his throne, the first step he took

was to release his brother Shah Zuman, and soon after Moollah Ashik who had betrayed him, was apprehended and suffered the punishment of his perfidy and ingratitude.

When the Baurikzye Khans gained the ascendancy over the Doo-ranee monarchs, Azeem Khan placed his nephew Nuwab Zuman Khan in the government of Nungnihar, and from the time of Azeem Khan's death 1823, until the year 1824, the Nuwab enjoyed the entire government collections of the province. Dost Mahomed insisted upon a portion of them being made over to him; this the Nuwab refused. The Ameer collected a force and marched against him, and on his approach the Nuwab withdrew his guns to Kameh, and there took up a position near Abdoor Ruman's Fort; negotiations took place between the contending parties, the Nuwab having made some slight sacrifice of his interests; Dost Mahomed returned to Cabool.

The Nuwab then commenced fortifying the town of Jullalabad, the old fortifications being nearly on a level with the ground; a great number of people were collected for the purpose; the work advanced rapidly, but ere a month had elapsed, the Ameer was again on his march to Jullalabad, and the fort was still incomplete; the Nuwab, however, determined to defend it. After three days resistance a mine was sprung, the town was taken by assault, and it was given up to plunder. The Nuwab was taken prisoner and displaced from power, and Sooltanpoor and the transit duties of Cabool were made over to him for his maintenance. Dost Mahomed's brother, Ameer Mahomed, remained a short time in charge of the province; he was succeeded by the Ameer's son Mahomed Afzool, who was recalled after a few months, and succeeded by his younger brother Akbar; he continued in charge until the arrival in 1839 of the British Troops. Meerza Aga Jan, a Kuzzilbash, was then on the part of the Shah appointed governor.

There are topes and extensive ruins to be found scattered over the valley, which if explored attentively by learned antiquarians would no doubt reward them for their labours.

There are now no perfect buildings of any size, beauty, or antiquity in the valley,

The royal gardens of Char Bagh, Baghwanee, Bala Bagh, Neemla, and Gundummuk, laid out by Sooltan Babur and Alee Murdan, and

renewed by Timoor Shah and Shah Zuman, during the Baurikzye rule were quite neglected.

The Gundummuk garden has been quite destroyed ; the fine old plane trees were cut down by sirdar Mahomed Akbar's order, to build the fort of Futtung, at the confluence of the Soorkhrood and Gundummuk rivers. The fort would be found strong against Afghan troops without artillery.

There is a Zearut at Char Bagh, to which Moosulmans and Hindoos go to pray. The former suppose it to be the tomb of Shah Fyz-oollah-Wullee, the cup-bearer of Mahomed the prophet ; the Hindoos, on the other hand, imagine it to be the resting place of Hajee Ruttun, a fuqueer of great sanctity and note. There is also a large Hindoo temple in the town of Jullalabad, inhabited by a supposed descendant of Ruttun. Hindoos in great numbers come from Peshawur and other places to make him offerings, which are said to amount to the large sum of 40,000 rupees annually.

In the neighbourhood of Jullalabad, there is also Shah Murdan's Zearut, held sacred under the supposition that Allee, the son-in-law of Mahomed, rested there, and in the temple is exhibited a large black stone, shewing an impression of the hand of Allee. A garden is attached to the Zearut, where a fair is held every Thursday, to which crowds from the town and camp resort. Nazir Hussan, formerly in the service of Nuwab Zumán Khan, is now expending his money on the Zearut and garden. The Zearut was originally raised by Abdoola Khan Khafir, in the reign of Timoor Shah.

Of late years the following persons filled the office of governor of Jullalabad.

<i>Governors.</i>	<i>In whose reign.</i>
Abdool Khan Khafir,	Timoor Shah.
Meer Dad Khan, (Isaukzye,)	Ditto.
Ghunnee Khan,	Ditto,
Gool Mahomed Khan, (Gurdeezye,)	Zuman Shah.
Causim Khan, (Moghul,)	Ditto.
Baba Khan, (Afshar,)	Ditto.
Meer Alee Khan,	Ditto,
Gholam Alee,	Ditto.
Shurreef Khan,	Shah Shooja.

Ibrahim Khan, (Jumsheeree,	..	Mahmood Shah.
Shehur Dil Khan, (Baurikzye,) ..	..	Mahomed Azeem Khan
Shukoor Khan, (ditto,) ..	..	Ditto.
Moghul Khan, ..	..	Ditto.
Nuwab Zuman Khan, ..	..	Ditto.
Ameer Mahomed Khan, ..	..	Dost Mahomed.
Mahomed Afzool, ..	..	Ditto.
Mahomed Akbar, ..	..	Ditto.
Meer Aga Jan, ..	..	Shah Shooja.

Routes from Jullalabad to Dukka.

No.	Names of stages.					Miles.
1.	Summer Kheil,	..	..	..	..	7
2.	Buttee Kote,	..	..	..	..	13½
3.	Huzarnow,	..	..	..	..	10
4.	Dukka,	..	..	..	..	9
						39½
						2
1.	Summer Kheil,	..	..	..	..	7
2.	Char Deh,	..	..	..	..	14
3.	Busawul,	..	..	..	..	8
4.	Dukka,	..	..	..	..	13
						42

From Jullalabad to Soorkhab.

1.	Futtihabad,	..	..	..	..	15
2.	Sufaisdung,	..	..	..	..	13
3.	Soorkhab,	..	..	..	..	10
						38
			2			
1.	Sooltanpoor,	..	..	..	..	8
2.	Futtihabad,	..	..	..	..	7
3.	Neemlah,	..	..	..	..	9
4.	Gundummuk,	..	..	..	..	6½
5.	Soorkhab,	..	..	..	..	7¼
						38

Weights, Measures, &c.

The land revenue in kind is collected in Tabreez weight, and the money taxes in the nominal Tabreez (Khaan) rupee.

Tabreez Weight.

2½ Charuks,	.. .. ..	1 Mun-i-Tabreez.
100 Mun-i-Tabreez,	.. .. ..	1 Kharwa-i-Tabreez.
1 Kharwa-i-Tabreez,	.. .. ..	10 Maunds Hindooostanee.
100 Kharwa-i-Tabreez,	.. .. ..	1000 Maunds Hindooostanee.

Coin Table.

10 Shahees,	.. .. ..	1 rupee Khawa.
20 Rupee Khawa,	.. .. ..	1 Tooman Tabreez.
1 Tooman Tabreez,	.. .. ..	Cos. Rs. 14.9.4.
100 Toomans-i-Tabreez,	.. .. ..	Ditto, 1,458-5.4.
1000 Toomans-i-Tabreez,	.. .. ..	Ditto, 14,583-5.4.

An account of a remarkable Aerolite, which fell at the village of Manicgaon, near Eidulabad in Khandeesh. Communicated, with a specimen, to the Asiatic Society, by CAPTAIN JAMES ABBOTT, B.A. late Resident Nimaur.

A Chemical Examination of the above Aerolite, and Remarks, by HENRY PIDDINGTON, Curator Geological and Mineralogical Department of the Museum of Economic Geology.

At the Meeting of October, 1844, Captain Abbott communicated to the Society the following documents, with two small specimens of the Aerolite.

CAPTAIN J. ABBOTT, Artillery Dum Dum, to the Secretary Asiatic Society, Calcutta,

Dum Dum, Sept. 16th, 1844.

Sir,—In July 1843, I received at Mundlaisir, from the Komarder (or Native Collector) at Asseer, a report of the fall, in that part of the country, of a meteoric stone, together with a few grains, said to be particles of the same. I immediately dispatched a Karkoon to the spot, to ascertain the truth or falsity of the statement, and to collect

specimens of the supposed Aerolite. These accompany my letter. They differ so much from the structure of every reputed Aerolite I have previously met with, that I should be inclined to doubt the veracity of the reporters, could I discover any other reason for questioning it. I have never heard any other instance of an Aerolite in that neighbourhood. The fact is implicitly credited in the neighbourhood of Eidulabad, where it is said to have occurred. These specimens appear to me to resemble masses of friable rock of the quartz family, which I have met with in Malwa. But it is evident that a mass of texture so loose could never have borne unshattered, the propelling agency of fire, nor has any volcano existed within the memory of man in Nimaur or Mahiswah, nor I believe in Khaundes, although fable declares Oojyne to have been buried beneath a shower of mud, and Mahiswah to have been destroyed by the mischievous malice of a demon. The depositions of the observers I have translated and appended. The spot was beyond my district, or I would myself have visited it. It is probable that the collector of Khaundes may have reported it to the Bombay Society.

This report, and the note upon granite in the Nurbudda, were prepared many months ago, but restricted leisure, and many concurring events, prevented their being forwarded.

J. ABBOTT, *Capt. Arty.*

Fall of a Meteoric Stone in Khaundes.

Deposition taken by a Karkoon, despatched from Asseer by Capt. James Abbott, to collect information upon the subject.

Oonkar, Puttail, and Ghubbahjee, Chowdry, of village Maniegaon, purgunnah Eidulabād, Tuppeh Sowdah, Illaquah Dhooliah in Khaundes, depose as follows.

Taken July 26th 1844.

On Mittee Asarr, Soodie Teej, Goraur kē dín.

We were in our house. At 3½ o'clock p. m., whether from heaven or elsewhere, a prodigious ball (ghybee golah) fell. The noise it made was very great, it might be heard twenty miles round. We heard it with our own ears, and in fear and trembling ran outside to look, so running out, we found that it had fallen outside the village

on the Southern aspect, and that in falling it had been shattered to pieces, some of which had been scattered far. We put our hands upon that which lay together, it felt cool; shortly after it became rather warm. When first we saw it, the pieces were black; after a day's interval the color changed to blue, and now the fragments are white.

Question. When the ball fell, was any flash perceptible, or was the heaven darkened? Who saw it fall? How large was it? And who heard the noise at the distance of 20 miles?

Answer. We *saw* nothing. When the ball fell, we heard the noise, and ran to see what had caused it. The spot on which it fell was hollowed by the shock, a span and half in diameter and three fingers breadth in depth. The ball was about the size of a kedgeree pot (ghurrah, i. e. about ten inches in diameter); the people of Eedulabad and of other parts heard the noise in the clouds, at least so they say. The ball being shattered, people came and carried away the pieces. The remainder was sent to the Sowdah Komardar, and by him to Dhooliah. What remains I give you.

True and literal translation.

J. ABBOTT, *Capt.*

Mundlaisir, August, 1843.

Pol. Asst. in Nimaur.

Note.—A few grains of this Aerolite were first sent me by letter from Asseer. I despatched a Karkoon immediately to the spot to make enquiries, and collect as much of the fragments as possible, supposing that he should have cause to believe the report well founded. The greater part of what he collected accompanies this report. It agrees exactly with the grains first sent me. J. ABBOTT.

At Captain Abbott's suggestion, the Collector of Khandeish, J. Bell, Esq. Bomb. C. S. was written to, and he has kindly forwarded us a few small fragments more, with the following letter and deposition.

To W. W. BELL, Esq. Collector of Khandeish.

SIR,—With reference to your Mahratta Yad of the 5th ultimo, with enclosure from the Secretary to the Asiatic Society of Bengal, requesting me to transmit any information along with specimens procurable of an Aerolite that fell in the month of July, 1843, in the vicinity

of the village of Manegaum of this talooka, I have the honor to transmit translation of a deposition given before me, by a couple of individuals who were spectators of the fall of the Aerolite in question, along with five small specimens of the same, all that I have been able to procure after much search ; these however I trust will be sufficient to indicate the nature of the Meteorolite.

I beg to return your enclosure, and to remain, Sir,

Your most obedient servant,

*Camp, Circuit at Rawere, C. INVRARITY, Actg. 1st Assist. Col.
Talooka Jaoda, January 1st, 1845*

Translation of a deposition given in Mahratta, by Goba Wullud Nagojee Chowdrie, and Hunnumunta ud Dama Naik Solie, inhabitants of the village of Manegaum, Pergunnah Edulabad, turaf Jaoda, of the Khandesh Collectorate, who were spectators of the fall of an Aerolite in the vicinity of their village, in the month of July 1843.

On the day the Aerolite fell we were both seated, about 3 o'clock of the afternoon, on the outskirts of the village, in a shed belonging to Ranoo Patel. There was at the time no rain, but heavy clouds towards the Northward ; there had been several claps of thunder for about two hours previously, and some lightning. Suddenly, while we were seated in the shed, several heavy claps of thunder occurred in quick succession, accompanied with lightning, on which we both went out to look around us, when in the middle of a heavy clap, we saw a stone fall to the ground in a slanting direction from North to South, preceded by a flash of lightning. It fell about fifty paces distant from us ; on going up to it we found that it had indented itself some four or five inches in the ground ; it was broken in pieces, and as far as we could judge, appeared to be about fifteen inches long and five in diameter, of an oblong shape, somewhat similar to the *chouthe* grain measure ; it was of a black vitreous colour outside, and of a greyish yellow inside ; it was then of a mouldy* texture, and hardened to the consistence of the present specimens afterwards. Only one stone fell. No rain had fallen for eight days previously, nor did it, until four days after the fall of the stone. It had been warm all day before, but

* So in MSS. Perhaps muddy, i. e. soft, earthy texture was meant ?—H. P.

not much more so than usual. From midday until the time the stone fell, (3 p. m.) it was very cloudy towards the northward ; after its fall, the thunder ceased, and the clouds cleared away. No stone of a similar description had ever fallen near our village before. The pieces of the stone were immediately after carried off by the country people. Our village is situated on the banks of the small river the Poorna ; there are no hills in its vicinity, the nearest being three coss (or 6 miles) off. The above is a true statement, dated at Rawere, talooka Jaoda, on the 17th December, 1844.

(Signed.) GOBA UD NAGOJEE CHOWDRIE.

 ,, HUNMUNTA UD DAMA NAIK.

True translation of the deposition given before me on the above date,
C. J. INVERARITY, *Actg. 1st Assist. Col.*

CHEMICAL EXAMINATION.

The specimens were referred to me for examination, of which this is my report.

The specimens are mainly composed of an earthy greyish white, pulverulent mass, slightly tinged with a bluish grey in some parts. It is excessively friable, and both crumbles and soils the fingers even when most delicately handled. In the earthy mass are thickly imbedded light, greenish, glassy particles of olivine, single and in nests, resembling green mica or felspar ; the appearance in some parts being almost that of an earthy variety of Lepidolite. On the side of one piece of Captain Abbott's specimens, is a bright black crust, thickly but minutely mammillated. When this is touched with the file it leaves a rusty mark, but gives no metallic trace. This crust is exceedingly thin, and splinters off, and in one place a mass of the olivine in it is melted to a green bead. It is too fragile, and our specimens too small, to attempt obtaining sparks from it. Two of Mr. Bell's fragments also have small portions of crusts yet adhering to them.

Internally and by the magnifier, a few bright white metallic points are discoverable, and in one or two places small nests of it ; there are also a few of a brown kind. We have one fragment of an Aerolite which fell in 1808, at Moradabad, which is pulverulent, but not so much so as the present specimen by a great deal. The present specimen is in this respect almost unique, as the only one I now recollect to have

read of as very pulverulent, is the one from Benares, mentioned in the Philosophical Transactions.

The Aerolite of Moradabad is studded over with rusty specks from the oxidation of the iron. All our other Aerolites are of a compact texture. I may note here, that we now possess in our collection, 10 specimens, comprising six varieties of Aerolites, and four of Meteoric Iron from Siberia, Brazil and India. One of the Society's Aerolites is also well entitled to be called Meteoric Iron, as it consists mainly of that metal, (and no doubt Nickel) rather than an Aerolite, by which we usually designate the more earthy looking stones.

The magnetism of the Kandes Aerolite is no where apparent except at the patch of pyrites (Magnetic Pyrites?) on the piece which has the crust, but here it is strong and distinct.

From its extreme friability I have not ventured to take its specific gravity, which is about 4 or 4.5, I judge, for it might crumble to pieces in the water, and is too rough and tender to admit of varnishing. Specific gravity however is an indication of no value in these heterogeneous compounds.

The green crystals, when examined separately, affect a somewhat rhomboidal or cubical form, but none are clearly defined. Their color is a bright, clear, and very light grass-green.

List of Meteorolites in the Collection of the Asiatic Society, 1st January, 1845.

1. Fell at Moradabad 1808, Captain Herring. One piece of this is rather friable. 3 pieces.
2. Dr. Tytler's Aerolite at Allahabad, 3 large pieces.
3. Aerolite fell about 40 miles to the West of Umbala, between the Jumna and Punja, 1822-3. Obtained by Captain Murray; given by Mr. J. Bird to Mr. Cracroft.
4. Fell at Bitour and Shapoor, 75 miles N.W. of Allahabad, 30th November 1822.
5. Fell at Mow Ghazepore, February 1827, R. Barlow.
6. Fell at Manegaon in Kandeish, July 1843, Captain J. Abbott, B. A. and J. Bell, Esq. Bombay C. S. Collector of Khandeish.

Meteoric Iron, or stones having a large proportion of it.

1. Meteoric stone containing Iron and Nickel, fell at Panganoor in 1811. Mr. Ross of Cuddahpah.
2. Meteoric iron, Siberia, Pallas,
3. Ditto ditto Sergipe Brazil, Mornay and Wollaston.
4. Lightning stone of Nepal, not examined, but may be Meteoric.

BLOWPIPE EXAMINATION.

The grass-green crystals above described: Per se infusible, but take a rusty brown appearance, as of semi-fusion or oxidation, on the exterior, remaining still translucent. *On Platina Wire,* with borax and phosphate of soda, fuses at first in part only (a lump remaining), giving a light clear olive glass; adding more of the flux it finally dissolves with various shades of olive and grass-green according to the proportions of assay and flux. A minute crystal in Mur: acid does not soften, gelatinise, or colour it by several days digestion. These are doubtless Meteoric olivine.

The white friable part, taken as free as possible from the grey specks and entirely so from the green crystals. *In the forceps* slightly oxidates to a rusty appearance at the outer part, but does not fuse.

On Platina wire and with Soda. Fuses to a dirty olive coloured bead, which in the reducing flame gives metallic iron with some earthy residuum. With Nitrate of Cobalt only a dull rusty colour. Hence the absence of Alumina, except perhaps in very minute proportion.

The metallic looking vein was assayed in various manners for Nickel, but no trace of it could be elicited, the vein being apparently pure pyrites. Nickel may nevertheless exist, though in small proportions, and we cannot venture on consuming more of these precious fragments, since the fused crust, the olivine, and the white matrix are chemical evidence enough of meteoric origin of the stone.

The whole of the dust which had collected in the paper, being carefully collected, was assayed both by the blowpipe and *via humida* for Chromium, but no traces were detected. As said of Nickel however above, so also of this substance: it may exist in minute proportion, though not detectable in such extremely small assays.

A few Notes on the subject of the Kumaon and Rohilkund Turaee.

By J. H. BATTEN, Esq., Civil Service.

Previous to the reign of the Emperor Akbar, that is, to the latter half of the 16th century, the history of Kumaon concerning the Turaee, in connection with its lowland possessions, and also, of the Hill Raj of that name itself, is but imperfectly known.

Even to a still later period, tradition, confirmed by documentary evidence and the voice of general testimony in the neighbouring districts, takes the place, within the province itself, of all authentic written records on which reliance can be placed. The few Puthan families of respectability now settled in the Turaee are, like their whole race in Rohilkund, but a recently introduced colony. From them, therefore, it would be vain to look for any details connecting the series of events even in their own villages. The *Bhoksa* and *Tharoo* tribes, although permanent occupants in the whole jungle tract lying along the base of the Sub-Himalayan mountains between the Ganges and the Gunduck, are not, and never have been, permanent residents at any one spot; nor are they possessed of sufficient intelligence to know the tale of their own chosen region, or be able to recount the revolutions which have occurred on the scene of their migrations. Of the other tribes inhabiting the present villages or clearings in the Turaee, it is not probable that many families can trace their settlement in that dismal wilderness, beyond the third, or utmost fourth generation preceding them. Rajah Sheo Raj Sing, the principal personage of the Turaee pergunnahs, does not owe his present position in that tract of talooqdar, or manager, or farmer, or zemindar, (or whatever, under existing arrangements may be his proper designation,) to any direct descent from the Kumaon Rajahs, or to any long possession continued from their time to his own. Before his grandfather Lall Sing, accompanied by Mahundra Chund the representative, at least by immediate birthright, of the royal race of Kumaon, descended with their families to the plains, and became, by favour of the Nuwab Wuzeer, connected to the latter history of the Turaee, intestine disturbances had begun to destroy the semblance even of a

central government in Kumaon, and the state records, such as they were, became scattered among the various *kamdars*, to whom they had been officially entrusted; and who only preserved such portions of them as might tend to prove their own importance, or that of their several families. During the troubles consequent on the Ghoorka invasion in the year 1790 A.D., the regular traces of past times became more and more obliterated; and when the last relics of the *Chund* Rajahs abandoned their native hills, and took refuge at *Kilpoory* in the plains, nearly the only place where they still possessed any thing like a property in the land, they took down with them no weighty burden of state records, and left but few behind. Afterwards at Roodurpoor, one chief scene of their exile, a fire occurred, which is stated to have consumed many family documents; while at Almora any *duster* or record office that existed, may be supposed to have commenced its collections only from the accession of the Ghoorkhalee Government. Under these circumstances, it is not a matter of wonder, that neither the British authorities in the hills, deriving their information from *kanoongoes*, and other usual depositaries of such knowledge, nor, the descendants of the Hill Rajahs in the persons of Sheo Raj Sing above named, or his cousin of the elder branch Pertaub Sing, now residing at Almora as pensioner of the English Government, should be able to furnish exact data, for an historic narrative.

2. Using such means as I have in my power, I proceed to draw a short and rough sketch of the successive revolutions during the Kumaon Raj, Kuttoora Dynasty, Chund Dynasty, &c. &c. to which the country has been subjected, and, whenever possible, of its successive conditions, in the hope, that such a description, however imperfect, may be found if not useful as evidence, at least acceptable as part of a picture, at a time when the attention of those in authority has been strongly drawn to the present state of the tract described.

3. The dynasty called *Kuttoora* is the earliest known to have reigned in Kumaon. The Rajahs of its line are said to have been of the *Sooruj-Bunsee* origin, and they have been clothed by the imagination of the *paharees* with almost divine attributes, while the extension of their authority to Delbie and Kanouj in the plains, and from Mundee to Siccim in the hills, is con-

sidently assumed as a matter of fact. The whole race* appear to have become utterly extinct, but, at what time and in what manner, no one can tell, and in fact their whole history is lost in the greatest obscurity. Within the present provinces of Kumaon and Ghurwal, *Josheemuth* near Budrinath, and *Kuttoor* not far to the North of Almorah in the now almost desolate valley of Bynat, are celebrated as the principal seats of their power. The ruins still existing in the latter place, and at *Dwara Hath*, some miles to the westward, are pointed out as relics of the Kuttoor Raj, as are also the low carved stone pillars called *Brih-Kumbh*,† placed at intervals of a few miles, so frequent in the eastern parts of the district, and which are said to have marked the halts or encampments in the royal progresses. Some of these ruins, especially the *chubootras* and wells, are not without beauty, at least in their carving, and the great number of small temples even now standing, each as it were dedicated to a separate idol, and the quantity of idol images themselves, which have been found in their precincts, shew that the Kuttoora Rajas were devout worshippers of the whole Hindoo Pantheon. The shape of the buildings, and the character of the sculptures, are said to be similar to the architectural features observed in the South of India, but, I believe, that the same forms are quite common in Bundlecund and on the banks of the Nurbudda. From the account above given, it will at once be seen, that the dynasty of which we are speaking, was of lowland origin, and that no signs of an aboriginal extraction are visible in its remains. As, before the Mahomedan conquest of India, the rulers of a region so illustrious in the *Shastras* as the *Himalaya* mountains, being also by their position masters of the sacred rites at the various sources of the Ganges, may be supposed to have held rank equal with, if not superior to, the Rajahs of *Kuttair*, or country between the mountains and the Ganges now called Rohilcund; and, as after the establishment of the Mahomedan empire in Hindostan, the Kumaon Rajahs were found in hereditary possession of the Turaee by a tenure quite independent of any grant from lowland potentates, I see no reason

* At least that tribe of the Kuthoora *Suruj-bunsees* which reigned in Kumaon.

† This is *Bhákhá* for *Brihstumbh*. ब्रह्मस्तम्भ

for doubting that the Turaee throughout its whole extent formed an integral part of the Kuthoora Kumaon Raj. That it also formed an important part, may be assumed from the almost absolute necessity still existing, that a large portion of plain country should, if not attached to the hills, at least be available for the annual resort of the *Paharees* and their cattle; (an occupancy which under native rulers could hardly be maintained without an actual right of property in the soil, and actual separate possession thereof by the hill powers;) and from analogies drawn from the late and existing feeling in *Nepaul* in regard to the tract at its base. Beyond this, all is conjecture regarding those ancient times; and the question whether *Sumbul* and *Bareilly* were then subject to Kuthoor, may be left for discussion between the *Paharees* and the *Desees*, when they meet annually at their now common pasture grounds, and need not engage the too jealous attention (as at one time it was feared it might,) of British functionaries.

4. The Kuttooras in Kumaon were, we are told, succeeded for Khussia Raj. some time (13 or 14 generations) by a *Khussia Raj*, that is, by numerous petty chiefs among the mountaineers themselves, each governing his own small territory, and fighting with his neighbours. The many small forts scattered throughout the province, in situations where such defences would be useless to a Government holding undivided authority over the whole tract, would seem to prove the truth of this traditional history.

5. On emerging at last, from this confusion, we find the earliest Chund Dynasty, name of the *Chund* dynasty in *Som Chund*, a *Chundrabunsee Rajpoot*, who is narrated to have come from the village of *Joosee* in the province of *Allahabad*, (Trans-Doab,) and to have established his power and a capital at *Chumpawut*,* at or about the year 1100 Saka, corresponding to 1235 Sumbut, and 1178 A.D. The *Joshee* (*Jyotishee*) Brahmins who have subsequently been such influential members of the hill community, accompanied the first of the Chunds to Kumaon. It would be quite out of place to register in this report, the list of Rajahs who followed *Som Chund*. Some per-

* Also called *Kalee Kumaon*, from its vicinity to the *Kalee* river.

sons, indeed, are found who deny the continuity of the dynasty altogether;* but, be that as it may, the historian of the *Turace* has almost nothing to tell concerning any of the line previous to the 4th generation. *Roodur Chund*, son and successor of Rajah *Kullean Chund*, (who removed the capital from Chumpawut to Almorah, and built that city in 1620 St. or 1563 A.D.,) was a contemporary of the Emperor Akbar, and, in the course of his reign of 28 years, made frequent visitations to the Turraee, and, not to leave himself without record in the land, became the founder of *Roodurpoor*.

6. But, what is meant by the Turaee in Akbar's time? To what extent extent of lowland dominion did *Roodur Chund* of Kumaon Turaee in his time succeed? Although an hereditary, was the Turaee an undisturbed possession of Kumaon in preceding times? On a reference to co-temporaneous history, we find that the year 1194 A. D., is the date generally fixed for the conquest of *Kanouj* by the arms of *Kutb-ud-Deen*, the Lieutenant of *Shahab-ud-Deen*, and, also, that 1195 A.D., saw him extend his victories across the Ganges to *Budayoon*. It is, I think, extremely probable, that an incorrect tradition may have anticipated the commencement of the Chund dynasty in Kumaon by sixteen years; and that, in the great revolution which transferred the empire of the Gangetic plain as far as *Benares* from the Rahtores to their Mahomedan victors, when the dispersion of numerous powerful Hindoo tribes took place everywhere, among them the earliest *Chund* and his followers found their way to Kumaon. But, whether the elevation of this race in the hills preceded or followed the fall of the Kanouj kingdom, the shock of that fall may well be supposed to have reached to the foot of the *Himalya*, and hardly to have been arrested at *Budayoon*, and the lower parts of *Kuttair*. The rule of the hill powers, whether *Khussia* or *Chund*, if it had survived at all the decadence of the

* It seems a matter of universal tradition that between the 8th and 9th succession of Chunds, a second Khussia Raj intervened; and also, that until the 11th of the line, by name *Lutchmees Chund*, some representatives of the old Kuttoora dynasty possessed a limited power at Kuttoor itself; but that in the reign of this Rajah, they were subdued by violence, or absorbed among the mass, or otherwise disappeared, and "the land knew them no more."

Kuttoora line, and the breaking up of that *Raj* into petty chiefships, must have been rudely shaken at this period. Even allowing, that subsequently, some kind of authority over this tract was regained, as the *Chund Rajahs* became, one after the other, more and more firmly seated on their mountain throne, the authority must have been one exercised under permission on account of tribute yielded to others, or, at best, under neglect or contempt on account of its intrinsic insignificance.

The *Puharrees*, indeed, while boasting of their ancient boundary on the south as *Gunga-wár*, or, not short of the Ganges, almost unanimously allow, that at one time, the possessions of their ancestors in the plains were woefully circumscribed, if not altogether lost; and that it was not without difficulty that *Udhian Chund*, the 30th of his line, attained by some means or, other an honorable and determinate position in the *Des* for himself and successors. To continue, then, the story, and answer the remaining questions placed at the head of this paragraph, *Roodur Chund* found himself the lord of the *Muhals* or *Pergunnahs* named below:—

1. *Suhujgeer*, now called *Juspoor*.
2. *Casheepoor or Kotah*, *Casheepoor*.
3. *Moondia*, *Bazpoor*.
4. *Guddurpoora*, *Guddurpoor*.
5. } *Bohsar*, { *Roodurpoor*.
6. } { *Kilpoory*.
7. *Bukshee*, *Nanukmutta*.
8. } *Chinkee*, { *Bilheree*.
9. } { *Surbna*.

This whole tract, which is exclusive of the Upper *Bhabur* nearer the hills, (of which I shall have to speak hereafter,) was called *Chourassee Mal*, and *Noulukhia Mal*, 'mal' being, then as now, the hill term for the low country. The former name was derived from the size of the territory, which was reckoned at 84 coss in length,—the latter name from the real or nominal revenue of the territory; viz., nine *lacs*. The boundaries on the west were the *Peera* or *Peela Nuddee* at *Raipoor*

between *Juspoor* and the *Ramgunga*; on the north the *Ookhur Bhoomee*, or, region of no water,—(now the *bun* or forest;) on the south the higher ground of the regular plains according to certain old known limits of the Pergunnahs; and on the east the *Surjoo* or *Sardah* river near *Poorunpoor*. The reign of *Roodur Chund* was not entirely without troubles, for during *Akbar's* minority, the Imperial officers attempted to resume the territory, and sent a force for that purpose. The young Rajah, however, made a successful resistance, and afterwards proceeded to *Delhi*, where he obtained favor at the Court of the Emperor, and distinguished himself in some expedition against *Nagor*. The final result of this step was his obtaining a *sunnud*,* for the *Chowrasee Malt* Pergunnahs, and his return to the hills with enhanced power.

7. In the time of his immediate successor, *Lutchmee Chund*, (still Successors of Roodur Chund to Bag Bahadoor in the reign of Akbar,) the royal armies appear to have revisited the Turaee, and their places of encampment are still pointed out at *Tandah*, and more especially at *Peepulhutta*, where there is a mango grove called the *Badshahee Bagh*. Fourth in descent from *Roodur Chund*, we find *Tremul Chund*, Rajah of Kumaon, between the years 1625 and 1638 A.D. During part of this period, the Turaee is stated to have attained a high degree of prosperity, and to have actually yielded nine laks of rupees from various sources of revenue to the hill treasury; but, before the death of *Tremul Chund*, the prosperity of the tract excited the envy of its neighbours, and encroachments began to be made by the *Kuttair* Hindoos, not disallowed by their Mogul rulers. His successor, *Baz Bahadoor Chund*, finding himself in danger of total dispossession from these fertile lowlands, repaired to *Delhi*, and imitating the conduct of his ancestor, entered into the military service of the Emperor, *Shah Jehan*. He accompanied the Imperial expedition against *Candahar* and *Cabul*. A fortunate opportunity occurred, and the division which the Rajah commanded was able to gain some important advantage. Consequently, on the return of the royal armies

* Not now existent at Almorah.

† Some persons incorrectly consider this word as an abbreviation of the Persian word *Muhal*,

to Delhi, *Baz Bahadoor Chund* was honored by many signal marks of favor, but not content with obtaining empty titles, he adhered to the original object of his visit, and procured the full recognition of his right to the *Chourasce Mal*, together with an order, addressed to the Viceroy of the *Sooba*, for effectual assistance against the *Kuttair* chiefs. Through the aid of *Nuwab Roostum Khan*,* he succeeded in expelling his enemies from the Turaee, and he afterwards caused the town of *Bazpoor* to be built, and to bear his name. It is said that "every *beegah* and *biswansee*" was cultivated at this time, and that the construction and repairs of bridges, *bunds* and water-courses was diligently cared for by the officers of government. These functionaries resided at *Roodurpoor* in the plains, and at *Barokheree* and *Kotah* on the spurs of the lowest range during the hot months. *Casheepoor* was not then a place of any importance, and the *Puharrees*, (I know not how correctly,) even place the foundation of the present town and gardens at a period more recent than the Rajas hitherto named. At *Kotah* and *Barokheree* and elsewhere in the lower hills are remains of forts and residences, and mango groves, which go far to shew, that the climate at those sites was not in former times so insalubrious as at present, when few men in power would confine their retreat from the Turaee heats to such low elevations in the mountains as these. *Kotah*, indeed, is stated to have been the capital for all the western portion of the *Chourasce Mal*, and to have given its name to the lower Per-gunnabs, and not only, as now, to the near submontane region. The good fortune of *Baz Bahadoor Chund* followed him to the end. He wrested the dominion of the *Bhote* passes from his Northern *Tartar* neighbours;—he associated his name with universal prosperity in the minds of his *Kumaonee* subjects;—and he died, after a rule of forty years, in the year 1678 A.D., during the reign of *Aurungzebe*.

8. If I were writing a connected history of Kumaon, the five suc-

History continued to the sions of Rajahs between *Baz Bahadoor Chund* time of the Rohillas. and *Kullean Chund*, would afford me ample material, both for narrative and comment: for during this period the prosperity of our hill principality having attained its culminating

* The founder of Moradabad.

point,* began rapidly to decline, and the descent to ruin was marked by civil war with its disastrous accompaniments of royal assassinations and popular anarchy—a fitting prelude to the foreign invasions which followed in due course. But the important epochs in the history of the Kumaon *Turaee* need alone occupy our present attention, and passing over the half-century to which I have alluded, I arrive in the year 1653 Saka, or 1731 A.D., at the accession of *Rajah Kullian Chund*. The Rohilla chief, *Ali Mahomed*, at or soon after this period, succeeded his converter and adopter *Daood Khan* in the powerful position acquired by the latter;—the splendours of *Budayoon*, the old capital of the *Sircar*, had begun to pale before the display of upstart military importance at *Aonla*;—and in short, *Kuttair* was fast becoming *Rohilkund* † In the earlier part of his rule, *Kullean Chund* had to contend against the aggressions of *Nucab Munsoor Ali Khan*,‡ who attempted to attach *Surbna* and *Bilhara* to the neighbouring (Trans-Sardah) *Chuckladarship* in *Oudh*;§ but, by a successful appeal to the Emperor *Mahomed Shah*, the nominal integrity of his *Turaee* possessions was preserved to the Kumaon Rajah. During his latter years he suffered from a far more terrible enemy; but let me here snatch from oblivion an important record of the times immediately preceding the invasion of Kumaon by the Rohillas, which has fortunately survived the ruin of that æra.

* *Oodeotchund*, the immediate successor of *Baz Bahadoor Chund* and *Juggut Chund*, the third in descent, bear a high name in *Puhurree* history. In the time of the latter, nine lacs are again mentioned as the revenue of the *Turaee*; but after this epoch, the intestine disturbances became utterly destructive of all prosperity, both in Highlands and Lowlands.

† वैसीसै अैसो करी ॥ देखो प्रभुके ठाट ॥
आंखले को राजाभयो ॥ वाँको खीको जाट ॥

Waise se aise kuree dekho Prubhooka tat!

Aonle ko Raja bhooyo—Bákolee ko Jat.

This popular distich concerning the sudden rise of *Ali Mahomed* is well known in Kumaon.

‡ Afterwards called *Sufter Jung*.

§ *Seobdeo Joshee*, the Prime Minister of *Kullean Chund*, was wounded in a fight with the *Chuckladar Tejoo Gor*, and was taken prisoner, but subsequently released.

Table of Revenue Statistics in the Munes (Mudh-des) Pergunnahs of Kumaon for the year 1666 Saka, corresponding to 1801 Sumbut, and 1744 A.D. furnished by Krishnanund Udkaree, descendant of the former Tehseeldars of the Turaee, and now inhabitant of Mouza Rugul, Putee Ultagoolie Pergunnah Baramundu, Zilla Kumaon.

Name of Pergunnah.	Rubbere Har-	Khureef Har-	Khurch Purbee	Racccha (Juneeo, &c.)	Saer (Miscellaneous.)	Gammig lac. (Joakke bacch.)	Teeka. (Nuzzurana.)	Fruit tax &c.) Khrchee Merda-jat.	Total annual summa.
Kasheepore, &c.	Rupees.	Rupees.	Rupees.	Rupees.	Rupees.	Rupees.	Rupees.	Rupees.	Rupees.
Roodurpore Bilhary } &c.	1,00,000	1,00,000	5,500	474	20,000	713	501	1,001	2,28,189
	50,000	60,000	2,750	303	10,000	352	251	7,000	1,24,356
	25,000	20,000	1,675	208	25,000	172	150	500	72,706
Total,	1,75,000	1,80,000	9,925	985	55,000	1,257	902	2,201	4,25,251

Note.—The Tehsildar of Casheepore and the Chourase Mat in general at the time of this statement was *Permanund Udkaree*. His grandfather *Cashenath*, in the time of *Bos Bahadur Chund*, is said to be the real founder of the present Casheepore, on the site of 4 villages, in which the temple of *Oxine Debe* was a place of old Hindoo pilgrimage. The son of *Cashenath* was called *Seonath*, and the village, of *Seonathpore*, and numerous mango groves near Casheepore and *Kotah* planted by him, still render his name immortal as the thriving and fortunate servant of Oodeotchund. His descendant *Kishna Nund Udkaree* possesses numerous sunnads, both on copperplate and paper, of that period.

All the reports made by the Kumaon *canongoes* and other natives belonging to the province, concur in fixing the nominal revenue of the *Chourasee Mal Pergunnahs* in the year 1744 A.D. (or one hundred years ago) at about the same sum as that named in the preceding statement; viz. somewhat more than 4 lacs of rupees, inclusive of all items. But, at the time of the Rohilla irruption in that year, the actual collections had dwindled to less than two lacs,* and as the whole lowland country, of which we are speaking, was virtually held in military assignment by the mercenary troops of the Rajah, known (from the place of their origin in the west) as *Nuggurkotia Sepahees*, it may be doubted whether in the time of *Kullean Chund*, at least previous to the expulsion of the *Rohillas* from Kumaon, any treasure ever ascended to Almorah at all. The present *Peshkar* of the *Huzoor Tuhseel*, *Kishna Nund Joshee* of *Gullee*, has found among his ancestral papers a long list of villages, and of their respective *rugbas*, the abstract of which I give below. It refers to an early year of *Kullean Chund*, 1657 Saka, or 1735 A.D.; but it unfortunately does not contain any information as to the proportion of waste to cultivated land.† It may, however, be found interesting, as shewing the number of villages standing on the rent roll at that time, and as affording data for comparison with the state of affairs in 1835 A.D., a date which (I know not how correctly,) I have heard mentioned, as that in which under British rule, Terrai matters were at their worst, and from which a renascent order of things may be assumed to have commenced.

<i>Pergunnahs.</i>	<i>No. of Villages.</i>	<i>Total Beegahs.</i>
Boksar, (Roodurpoor, Kilpoory,)	247	7,90,950
Bukshee, (Nanukmutta,)	139	3,83,300
Chinkee, (Surbna-Bilheree,)	121	3,15,400
Casheepoor, ...	139	4,86,800
Suhujgeer, (Juspoor,)	59	1,58,400
Moondia, (Bazpoor,)	81	2,38,500
Guddurpoora, . . .	83	3,31,200
<hr/>		
Grand Total	869	27,04,550

* Only 40,000 rupees are mentioned in some of the records, but it is doubtful whether these referred to the whole or a part of the Turaee.

† *Kishna Nund Udkaree* also possesses very old lists of Terrai villages and their *beegahs*; but no account of cultivation or of ploughs. All these lists can be copied out *mouzahwar* if necessary, either in Hindee or Persian characters, and forwarded to H. H. the Lieut. Governor.

In the years 1666-7 Saka, 1744-8 A.D., the Rohillas twice invaded Kumaon, under their two leaders *Nujeeb Khan* and *Peinda Khan*. Though their stay was short,* its ill results to the province are well and bitterly remembered, and its mischievous, though religiously zealous character is still attested by the noseless idols and trunkless elephants of some of the Kumaon temples. The first irruption was only arrested in the very heart of the hills at *Ghyr-Mandee*,† near the sources of the *Ramgunga*. Here the *Rajah of Ghurwal, Pruteep Sah*, checked the further progress of the Rohillas, and turned them back by a bribe of three lacs of rupees to their leaders; and, thus, the holy land, which owned his Kumaon neighbour and himself as its princes and guardian, was relieved from its first contamination by Mahomedan contact.

The second invasion, caused by the discontent of *Ali Mahomed* at the small spoil brought down to him, was stayed at the very entrance of the hills at *Barokheri Pass* (between *Bhamouree* and *Bheem Tal*,) where the Rohilla force was routed by the minister, *Seebdev Joshee* and his highlanders, who had seen too much of such visitors in the former year to allow them again to surmount the *Gaghur*. It is generally believed, that the Rohillas were incited to both attacks by some domestic traitors of the *Rotela* tribe, one of whom, by name *Himmut Sing*, had been put to death by the Kumaon Rajah for rebellious conduct. The complete expulsion of these predatory foreigners from the open plain of the *Terrai* was found too difficult a task for the *Puharree* arms; and, hence, recourse was had to other means. *Kullean Chund* himself repaired to the camp of the Emperor, then pitched at *Sum-*

* Those who object to the hill people of Almorah as being unaccountably and foolishly scrupulous on the subject of kine killing, forget that Benares, Muthra, and other Hindoo localities have been for centuries under direct Mahomedan rule, whereas Kumaon never had one of "the faithful" as its immediate lord. The only Musulmans formerly known within the hills were certain families of *Shikurries* and *cooks* —who received favor at the hands of the Rajahs, the former for killing game, and for ridding the country of wild beasts, the latter for preparing suitable food for any Mahomedan guest of rank. The Rajah of Bhurpoor still entertains a similar class of purveyors.

† Near this spot is the beautiful country residence of the Kumaon Commissioner, which is highly convenient, as being on the borders of both districts, Kumaon and Gurwal.

*bhul**, and implored for aid against his enemies. At that time (1747 A.D.), the extraordinary power obtained by the Rohillas had greatly alarmed the imperial Government, already sufficiently weakened by the Mahrattas and by Nadir Shah, and very strong efforts had been made to reduce them, attended with considerable success. Twenty-two descendants of the old *Kuttair Rajahs* are said to have been present in camp, headed by the chief of *Thakordwara*,† all clamorous for protection. The Kumaon Rajah did not sue in vain, and the result of his visit to *Sumbhul* was a renewal of his *sunnuds* for the *Chowrasee Mal*, and the abandonment of the territory by the Rohillas, with the exception of the Eastern tract at *Surbna* and *Bilheree*, besides sundry marks of imperial favor. Soon after his return to the hills, he died, and the year of his death (1748 A.D.) also saw the decease of the Emperor Mahomed Shah and the adventurer Ali Mahomed.

9. The history of *Rohilcund* between the years 1748 and 1774

A.D. is well known. The constant conflicts between the *Soobahdar* of *Oudh*, *Safter Jung* and the Rohilla chiefs, attended occasionally with no small disgrace to the arms of the former, (and through him to those of his master the Emperor *Ahmed Shah*,) terminated in the utter

Reign in Kumaon of Deep Chund, and the contemporaneous account of *Rohilcund* to its conquest of by the Nawab Wuzer of *Oudh* in 1774 A.D.
discomfiture for a short period of the latter, by the introduction of the *Mahrattas* and *Jds* into the disputed territory as the formidable allies of the *Wuzeer*. Then followed, as might be expected, the usurping occupation of *Rohilcund* by those very allies themselves, and the attraction to that fertile quarter of their swarming countrymen from the *Deccan*. The revolutions which dethroned and blinded *Ahmed Shah*; which first exalted and then brought down to death his puppet successor, *Alumgeer II*; which linked together in the bands of temporary amity the regicide and self-elected *Wuzeer Ghazee-ud-Deen*, and many of the Mahratta leaders,—the advance of *Ahmed Shah Durrane*, and the repetition at Delhi of some of the horrors enacted under *Nadir Shah*; and afterwards, on the departure of the *Abdallees* from *Hindoosthan*, the overwhelming height to which the flood of Mahratta

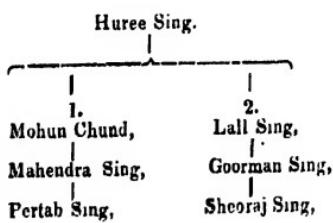
* I believe that the *Sote* then derived its name of *Yar Wufadar*, when the pucca bridge was built for the army, the Emperor having called it, "Yar Wufadar dul tumun Sote"

† Whose family is now, I believe extinct.

dominion attained ; these events accumulating on each other, involved the whole of Upper India in anarchy and confusion, and completed the destruction of the *Mogul* empire. As affecting Hindooosthan in general, they caused the minds of all men to be fixed on one great question, till the decision of which there could only exist two great parties ; viz. Who shall be masters, the *Mahrattas* or the *Affghans* ? As affecting *Rohilcund* in particular, the crisis of affairs united together by one common interest, the ruler of *Oudh*, then *Shoojah-ud-Dowla*, and the Rohilla chiefs, *Hafiz Re hmut Khan*, *Nujeeb-ud-Dowla*, and all the minor leaders of the clan ; and for a brief period, the chivalry both of Oudh and Rohilcund was engaged in a common cause. The battle of *Paneput* might very probably have ended in a different manner, if the *Dooranee Shah* had not been thus assisted, and if he had not found on his side in that bloody field *Affghans* of the *Hindooosthanee* colony, as brave and undegenerate as his own *Abdallees*, fresh from the rugged passes of *Afghanistan*. Who on the evening of the 6th January 1761 A.D. contemplating that great battle field, and reflecting on its results, could have guessed or believed that the fate of India had really already been decided not five years before on an obscure swamp in Bengal ? or, have foreseen, that in regard to the sceptre of Hindooosthan, the slaughter of that day had been a fruitless sacrifice ; that the *Affghans* almost from that very hour would be strangers to the soil ; that the *Mahrattas*, then supposed to be an almost annihilated power, would again contest the throne of India with foreigners, but, of a still more distant origin and still more distinctive race ; or, that, finally, peace and plenty would smile on that very plain, invited to the land, neither by Mahommedan nor Hindoo, but by the Christians of a Western Atlantic isle ! Yet, to Rohilcund at least, (whereto my tale must return,) far different from peace and plenty were to be the intermediate gifts of the English race. When *Hafiz Rehmut Khan* flushed with his share of victory, returned to his own country, it may be assumed, that, even if no higher aspirations for the good of his subjects expanded his breast, he still fondly hoped that the good fortune of his race and family would henceforth be permanent ; that his last battle had been fought, and that he might be allowed to end his days in quiet and happiness. Alas ! the lapse of thirteen short years, not all ill-spent, we may hope, brought to

his door a totally unexpected enemy in purchased alliance with the ancient hunters of his line. If then at *Kutterah* on the 23d April 1774, the victorious English general turned away in sadness from the corpse of the gallant *Hafiz Rehmut Khan*, and reviewed with pain and disgust the results of his own triumph, the civil narrator of this tragical revolution, however indignant at the gross misrepresentations and false colouring of facts, which both in the senate and the library have associated the early English name in Rohilkund with altogether unredeemable shame, and the extinguished rule of the Rohillas with every fancied virtue, may be excused for pausing one moment in his task, and yielding the tribute of his deep regrets over the bier of the Rohilla chief. But I must not travel further from my record. What was the effect of all the above named revolutions on the circumstances of the *Terrai*? The reign of *Rajah Deep Chund* in *Kumaon*, after lasting nearly thirty years, ended in his murder in 1697 Saka, or 1775 A.D. He was, therefore, almost from first to last, a contemporary of *Hafiz Rehmut Khan*, and the catastrophes of the Rohilcund and Kumaon principalities occurred within a year of each other;—or, if nothing but the crowning success of the Goorkhas in 1791 A.D. can be considered as the conclusion of the Kumaon raj, the year of *Deep Chund's* violent death at the hands of *Mohun* Sing*, his spuriously descended cousin, may be recorded as commencing the fifth act of the hill tragedy. During the first sixteen years of his reign, *Deep Chund* enjoyed the advice and aid of the wise minister or *Bukshee*, *Seeb-dev Joshee*, to whose care the dying lips of *Kullean Chund* had entrusted the youthful prince. The trust appears to have been well fulfilled, and during this period the management of the *Terrai* occupied a large share of the *Bukshee's* attention. Forts were built at *Roodurpoor* and *Casheepoor*, as outposts to watch the Rohillas,

* As some mistakes are often made as to the relative position by birth of *Pertab Chund* at *Almorah* and *Sheoraj Sing* at *Casheepoor*, I give their immediate genealogy:—



and to guard the property, then far from inconsiderable, at both those places. At the former place, *Hurree Ram Joshee*, a Kumaonee and cousin of Seeb-dev, and at the latter place *Sree Ram Doss*, a native (I believe) of *Bazpoor*, acted as the agents of the Kumaon government. The son of *Sree Ram Doss*, *Nundram* by name, is celebrated in Kumaon history, as the traitor, who in conjunction with his brother *Hurgovind*, for selfish purposes, ceded the possession of the Terrai to the *Nawab Asoph ud-Dowla*, after murdering Hureeram Joshee's son, *Munooruth*, and thus obtaining power over Roodurpoor and the Eastern Pergunnahs. The nephew of Nundram, and son of Hurgovind, *Seeb Lall*, is the person whom in 1210 Fuslee, the English found in power in the Terrai, and with whom the first settlement of that tract was made. We have now all the *dramatis personæ* on the stage, before the curtain drops on the scene, at the close of Kumaonese influence in the Terrai. During Seebdeo's administration, the Rohillas did not disturb in any great degree the tranquillity of the Kumaon lowlands. Their chiefs, during the frequent flights which they made to the foot of the hills when they had encountered any disasters below in conflicts with the Wuzeer's forces, formed an acquaintance with the hill Rajah and his Ministers, which in some cases ripened into friendship. *Deep Chund* and *Hafiz Rehmut Khan* exchanged turbans, and *Seebdeo's* son, *Hurackdeo Joshee*, who afterwards became so conspicuous a political character at the period of the war between the British and Nepalese, enjoyed a place of trust in the immediate household of *Nujeeb-ud-Dowla*. At the battle of Paneeput, Hurree Ram Joshee is said to have distinguished himself conspicuously amongst the levies brought to that place from the Rohilkund territory, and to have carried back to Kumaon an elephant and other plunder of the Mahrattas to the extent of some thousand rupees, which the Rohilla chiefs accorded in return for the aid or goodwill of the Kumaon Rajah at that great crisis.

10. The Terrai remained in a state of (comparatively speaking) fair

Conclusion of Deep prosperity during that portion of *Deep Chund's* Chund's reign.—Troubles reign, in which the hill territory was undistracted of that period.—Effects of events, both in hills and by internal commotions. Up to the death of Seeb-plains, on the state of the Terrai.—And summary of *deo Joshee* in 1686 Saka, corresponding to 1764 A.D., these commotions had been very partial events antecedent to the final separation of the lower Bhabur from the hill territory. and trifling in Kumaon, while at the same time

the plains of *Hindoostan*, including *Rohilkund*, were the scene of constant disturbances and change. The *Terrai* became filled with emigrants from the lower country, who had fled from the extra-taxation, and the multiplied masters, which the wars of that period had created. This was the first great recent emigration into the *Terrai*. The next extensive influx of lowlanders occurred immediately after the accession of the *Nawab Vuzeer*, as above related, to the sovereignty of *Rohilkund*, and continued till the tyranny of the new reign had somewhat over-past, and till (after the second *Rohilla* war with *Fyzoollah Khan*, who himself brought large numbers of people to the jungle, where his entrenchments were formed,) the lower districts became again fit for the habitation of peaceful and industrious people. Thus, at first, tolerable good government at one place, and intolerably bad government at another, contributed to the occupancy of the waste lands of the *Kumaon Bhabur*, by natives of other districts; and a few years subsequently, the *Ghoorkallee* invasion of *Kumaon*, and the civil wars which preceded that event, drove down numerous mountaineers to the same quarter, and made *Casheepoor*, *Rooderpoor*, *Kilpoory*, and other frontier towns and villages the emigrant settlements of numerous individuals, whose political importance or wealth rendered them peculiarly obnoxious to the evil of a revolution, and whose stay on the hills had become incompatible with their safety. We may, I think, date at this period the planting of the numerous mangoes groves* in the *Terrai*, which at this day so frequently surprise the sportsman, in spots where wild beasts occupy the place of human inhabitants, and swamps lie over the site of villages.†

The death of *Seebdeo* by violence in a military emeute at *Casheepoor*, occurred as above recorded in 1686 Saka, or 1764 A.D., and from that time I much doubt whether the dependency to the hill state of *Kumaon* of the whole *Terrai* (except a slip of forest at the very base of the hills,) did not cease and determine. While that minister sur-

* There are other groves of older date no doubt, as there are ancient wells, and *chubootras*, remains of aqueducts and the like; but the existing groves for the most part do not appear older than 60 or 80 years.

† Some *Puthan* families were great benefactors of the *Turai* for a short time, and the large *gools* and gardens which bear the name of *Jungee Khan* and others, attest their former influence, especially in *Bazpoor* and the western Pergunnahs.

vived, the rent roll of the *Chowrassie Mal Pergunnahs* is recorded to have been as follows; but, there is strong reason to believe, that both in the time of *Shoojah-ud-Dowla* and in that of his predecessor *Suftur Jung*, the *South-Eastern* extremity of the *Kumaon Bhabur* had fallen into the hands of the *Vuzeer* or the *Rohillas*, and that the *Kumaon Rajah* was merely considered in that quarter, *nominal Zemindar* or *Jagheerdar*.

Pergunnahs at present attached to Zillah Moradabad.

Jasspoor,	...	...	...	50,138	0	0
Casheepoor,	...	...	...	95,648	0	0
Bajpoor,	...	...	...	55,664	0	0
						2,01,440 0 0

Pergunnahs now attached to Zillah Bareilly.

Roodurpoor,	...	...	...	72,207	0	0
Gudderpoor,	...	...	...	45,654	0	0
Kilpoory,	...	...	...	40,000	0	0
Bilheeree,						
Bindara,	{		...	75,910	0	0
Nanukmutta,	{					
Surbna,	..	..	...	25,000	0	0
						2,58,771 0 0
						Total Rupees 4,60,211 0 0

Of this total sum, Rs. 1,32,000 were estimated as the *Rajah's share*, supposing the sovereignty of the Kumaon ruler in this tract to have been a reality ; or *proprietary profits*, supposing him to be entitled only to the name of *Zemindar*. Out of this royal share or *revenue*, (the greater part of which was collected in kind,) the military assignments

* It is also highly probable, that some portion of this amount was collected on account of *kdbáns*, or timber duties, in the forest lying to the north of the Chowrassee Mal, and still included in Kumaon.

to the *Nuggur Kotias* and others were paid, and Rs. 40,000 are (I believe with complete truth,) mentioned as forming the highest amount remitted to *Deep Chund's* treasury at *Almorah*.* In the earlier times of the *Terrai*, the *Rajah* dealt more directly with the cultivators of the soil, and the intervening tenures, religious, *mofee*, military, and the like, did not exist; hence, the large amounts recorded as *revenue*. In regard to the *cultivators*, the *Rajah's* share was considered to be a sixth of the produce; but, this fact would militate greatly against the stories handed down of the *Nowluckia Mal*. Fifty-four lacs worth of produce in the narrow slip of the *Chowrassie Mal*, would indeed have entitled it to a high rank among the many so-called gardens of India.

The remaining portion of the rental enumerated in the statement was collected for the benefit of some few Brahmin *Mafeedars* and some hill temples; but principally at that period by the headmen among the hereditary *Chokedars* of the *Terrai*, who had been gradually introduced into the territory from the time of *Baz Bahadoor Chund's* visit to *Delhi*. In the south-eastern extremity of the *Bhabur*, the race of *Burwaicks*, and in the same direction nearer the hills, the *Jooteals*, and in the Western Pergunnahs the *Mewattees* and *Heirees* (Mussulmans,) were the guardians, but in fact, the possessors of the soil; and a system of "black mail" was thus introduced, the evil effects of which remain to this day, and which during its continuance, rendered the sub-montane tract the general safe resort of the banditti, at the same time that it gave protection to a portion of the community; that is, those who could afford to pay the insurance fees thereof; and saved others from outrage and plunder only by making them connivers, through shelter and concealment, with the worst of criminals. *Hurrukdeb* Joshee* and *Jyekishen Joshee* succeeded their father as Ministers, and soon after both *Casheepoor* and *Roodurpoor* were plundered by predatory bands of *Patháns*, who are stated to have found a large quantity of booty at those places, owing to the temporary inhabitancy thereat, of the earlier emigrants of whom I have spoken.

* The direct lineal descendant of this personage, called by Mr. Fraser "the Earl Warwick, or king-maker of Kumaon," is, I am sorry to say, living in very reduced circumstances, and without a pension at *Almorah*, while others, with smaller claims are provided for.

The years between 1764 and 1775 A.D. formed a period of trouble and distress in Kumaon, which, however, has its parallel in every native state, and the natural consequences of which were the final foreign invasion which took place 16 years afterwards in 1791, and the intermediate visitations of mercenary troops brought into the province by the partizans of the several factions. A summary of events for this period exists in the Agent's office at Almorah, and is contained in a report dated 20th October, 1814, by Mr. W. Fraser, who appears to have received his chief information from *Hurruck-deb Joshee*. The following extract is made from the report,* explaining, quite sufficiently for the present purpose, the revolutions of that period within the hills.

Extract.

"The eldest son of Seebdeo Joshee, Jyekishen, succeeded him "in his office and situation as prime minister and viceroy, in which "place he continued for two years and a half, when a son was born to "Deep-Chund the Rajah. On this event the mother of the boy con- "sidering that in consequence of having a son, she had some claim on "the regency, intrigued with Hafiz Rehmut Khan of Rampoor, "through Jodha Sing of *Kuthere*, to whose son the daughter of the "Rajah was betrothed, and who was a favourite servant of Hafiz "Rehmut Khan, to set aside the authority and viceroyalty of Jyekishen, "who retaining his office, should obey the command of the Rannee. "Through the interest of Jodha Sing, Hafiz Rehmut was prevailed "upon to speak to Jyekishen, and he in disgust and disappointment "resigned all his situations and retired from the government. The "Rannee then bestowed the situation of Bukshee, or head of the "army upon Mohun Sing, the post of prime minister upon Kishen "Sing, the Rajah's bastard brother, and the viceroyalty on Purmanund, "a paramour of her own. Jodha Sing gained the management of "Casheepoor, a large Pergunna. About a year after this, the Rannee "deprived Mohun Sing of his appointment and insignia of his office, "bestowing them upon her favourite paramour. Mohun Sing fled to "the Rohillas, and through the assistance of Doondee Khan of Bis-

* Evidently a translation.

"soulee, who was jealous of the power and influence Hafiz Rehmut Khan exercised in Kumaon, gathered a body of troops and Rohillas, "attacked the capital of Almorah, defeated the Rannee's troops, and "eight months after his expulsion, obtained possession of the Rajah's "and Rannee's persons, and established himself in the government. One "of his first acts was to put to death Purmanund, his first enemy, "and about two years afterwards, during which time he continued "quite paramount, he put the Rannee to death. When this act was "known, Hafiz Rehmut Khan again sent an army with Kishen Sing, "the brother of the Rajah, who had fled when the Rannee was "killed, expelled Mohun Sing, and put authority into the hands of "Kishen Sing, who with the assistance of Jyekishen, and the old "respectable officers of the government, carried on business for "four or five years. Mohun Sing had fled to the camp of Zabeta Khan, and subsequently to that of Shooja-ood-Dowlah. Kishun Sing, "the viceroy of the Rajah, fell into bad hands, and paying attention "to favourites, dishonoured many of the old respectable servants of "the government. These people considering that Mohun Sing, al- "though expelled, would not desist from disturbance and intrigue, agreed "to call him, and put the government into his hands, to be exercised in "the name of the Rajah, and with the assistance and advice of Jyekishen. "Mohun Sing being thus placed in power, in the course of the second "year put the Rajah and all his family into confinement, treacherously "murdered Jyekishen,* and established himself firmly in the go- "vernment. This usurpation seemed bad in the eyes of the Ra- "jahs of Ghurwal and Dotie. They leagued with the discontented "people of Kumaon ; the injured family of Jyekishen, one of the oldest "and most respectable of the high officers of Kumaon, collected a "large force, defeated and expelled the usurper, and established Purdoomun Sah, the second son of Lulut Sah, the then Rajah of Ghurwal, "upon the rajehip. Purdoomun Sah reigned 9 years, proped by the old "officers of the state, amongst whom the most noted was Jeeanund, "Gudadetur and Huruckdeo, of the family of Seo Dev and Jyekishen :

* At that time Nundram and others had possessed themselves of the Terrai nearly to the foot of the hills, and Mohun Sing invited Jyekishen to his camp near Chokum, (some miles above Chilkeea,) to arrange for a common defence of the Terrai against the lowlanders. Jyekishen fell into the trap, came to camp, and was assassinated.—

"after this lapse of time, Lulut Sah, the Rajah of Sreenugur dying, the brothers, Jykurut Sah who had succeeded to the rajship of Ghurwal "on the death of his father, Lulut Sah, and Purdoomun Sah who had "been set up in Kumaon, quarrelled. Jykurut Sah was desirous of establishing Mohun Sing in Kumaon to the prejudice of his brother, "having been bribed by him; and Purdoomun Sah was naturally "anxious to expel his elder brother and establish his younger and full "brother Puracram Sah at Sreenuggur. In the mean time, Jykurut "Sah died; and Purdoomun Sah leaving Kumaon against the will of "all, went to take possession of Ghurwal. He wished indeed to leave "his younger brother Puracram Sah in Kumaon, but he was equally "desirous of seizing upon Ghurwal; this strife continuing, both left "Kumaon in the charge of Hurruckdeo, and (shortly after uniting with "Mohun Sing) fixed him there. Hurruckdeo being driven out, collected "an army in the districts of Casheepoor and Roodurpoor, again attacked "Mohun Sing, took him prisoner and placed him in confinement, and "in retributive justice for the murder of the late Rajah and all his family, "had him put to death.* He did not continue many months in possession of the country, when Lal Sing, the brother of Mohun Sing, "receiving the assistance of Fyzoolah Khan of Rampoor entered Kumaon, and drove Hurruck and his party to the frontier of Ghurwal, where "receiving assistance from Purdoomun Sah, he repelled the invading Rohillas, and regained possession of Almorah, the capital. Puracram "Sah, however, always unsteady and unreasonable, took the part of "Lall Sing; and Hurruckdeo deprived of his assistance, retired with "honor to Sreenugur. Lall Sing did not however reign long. A year, "or a year and a half after, the Goorkha power invaded the country, when "all the discontented people, and particularly the family of Jyekishen and "Hurruckdeo took refuge with them and rejoiced in Lall Sing's final "expulsion."†

* Mohun Sing was beheaded in the temple called *Narain-ke-Than*, two miles to the North of Almorah, on the hill now called "Mount Browne."—

† This report must throughout be taken *cum grano*, for though true in regard to the main facts, there is throughout a strong bias against the family of Mohun Sing and Lall Sing, and an equally strong partiality towards the great rival family of the Joshees. There is also one omission; viz. that Hurruk Dev at one time set up a nominal Rajah, a near relation of Deep Chund, and called him *Seeb Chund*, afterwards degrading him, and there is one exaggeration; viz. that Mohun Sing gave up

The murder of *Monoruth Joshee*, the agent of the Kumaon government at *Roodurpoor*, by *Nundram* of *Casheepoor*, an event previously glanced at, combined with the treacherous murder of *Jyekishen Joshee* by *Mohun Sing*, as narrated in the above extract, placed the whole power over the *Bhabur* tract at the disposal of *Nundram* and his family, and he took the best steps for securing his position, making terms with the *Nawab Vuzeer*, then *Asoph-ud-Dowlah*, and by becoming *Ijaradar* of the territory under that ruler. After two or three weak and ineffectual struggles in the field with the *Ghoorkas*; *Mahender Sing* and his brother *Lall Sing* were finally obliged to abandon the hills, and settled at *Kilpoory* in the *Terrai*, under the protection of the *Nawab Vuzeer*, obtaining thereby a guarantee for the retention, by the family, on some doubtful kind of tenure of some portion of the tract, over which their ancestors of the *Kumaon Raj* had ruled, and which as far as any actual *Jagheer* was concerned, was subsequently exchanged for the grant of *Chachheit*, which is situated in a more Southerly direction. Between 1791 and 1802, when the cession of *Rohilkund* to the British government took place, the *Ghoorkas* were too much occupied within the hills to bestow much attention to the old lowland territories of Kumaon; but they obtained for sometime possession of *Kilpoory*, and they were afterwards driven out by the forces under *Ata Beg* and *Sunbhonath* sent from Bareilly, aid having been implored by *Mahender Sing* and *Lall Sing* who had been forced to fly to *Luknow*,* and the danger on its northern frontier in *Rohilkund* having become a source of deep anxiety to the *Oudh durbar*. *Casheepoor* then became the principal residence of the exiled family; but *Roodurpoor* was also often visited, and from their statements, it would appear, at that time to have been a flourishing place. *Pertaub Sing*, indeed, informs me, that even until so late a period as 1815, when the march of the British troops to

Almorah to Rohilla rule, whereas this was not exactly the case; as *Mohun Sing* employed mercenary Rohilla troops who occupied at times the capital, so also did *Lall Sing*, and so did *Hurruckdeo*, and afterwards the British; but in all these visitations the Brahmins governed both Almorah and the province, and the Rohillas never even had a mosque for their prayers. *Hurruckdeo's* rescue of Almorah was thus, after all, not so very great an act of patriotism, as the report would appear to make it.

* *Hurruckdeo* about this time (1797 A.D.) was in attendance on Mr. Cherry at Luknow and Benares, and endeavoured to interest the British authorities in favour of the Hill Rajahs against the Goorkas.

the hills, combined with other visitations, more especially banditti, harassed the inhabitants by requisitions and losses of all kinds, that place* could boast of 1,200 *Brinjarries* with their equipage, 200 hackeries and their owners, 200 weavers, and 700 families of *choomars*, *koormees*, *lohrs*, &c., in addition to a large agricultural population, and the numerous occasional followers of his father and uncle, with other exiles from the hills.

11. I have thus brought to a conclusion the history of Kumaon,

* chiefly in connexion with its dependencies in
The Government of the Nawab Vuzeer, and of the British. Reflections there-on and on the state of the country, with allusions to that part of the *Bhabur* still included in Kumaon —Conclusion.

the lower Terrai, otherwise called *Bhabur*, *Munes*, and *Mal* by the *Puharrees*, and I believe that, however unimportant, the information thus given, is for the most part new. Knowing

little, I can tell little of the further history of the Terrai, and it would be presumptuous in me to intrude on ground which belongs to the *Plains* authorities.† The abstract of all the intelligence acquired by me on this subject, may however be briefly recorded. The rule of the *Nawab Vuzeer* in the *Mal Pergunnahs* was, on the whole, beneficial, but, chiefly in a negative point of view. The bad government of districts, naturally more adapted for culture and habitation, drove large colonies of people from the south to a region where the background of the forest and the hills could always afford a shelter against open oppression; where the nature of the climate was not such as to invite thereto the oppressors in whose hand a whole fertile and salubrious land had fallen; and, where, also, on this very account, the rulers, who did exist, found it their interest to conciliate and attract all new-comers. The management of the territory in question by *Nundram* and *Seeb Lall* is generally well spoken of, except in the matter of police; but, even in this latter respect, the mismanagement was not more injurious to society, than the state of affairs in regard to the *forest-banditti* became in times not far distant from our own. I believe that it may be confidently stated, that at the commencement of the British rule in Rohilkund, there existed in

* *Roodurpoor* was partly ruined by the establishment of the Hill *Mundee* of *Huldwunee*, 20 miles nearer the hills, and then completely, by the swamp caused by the Nawab of *Rampoor's Bund*.

† Not only present, but past.

the Terrai a greater number of inhabited spots than there existed 30 years afterwards in the same tract; that more, and more careful, cultivation was visible in every direction; that the prairie, if not the forest, had retreated to a greater distance; that the *gools* or canals of irrigation were more frequent and better made; that more attention was paid to the construction and management of the *bunds* on the several streams; and that, finally, on account of all these circumstances, the naturally bad climate, now again deteriorated, had somewhat improved. While recording this statement, I must not omit to add, that I myself possess no positive separate proofs that my assertions are correct; but that I write under the influence of almost universal oral testimony, supported, nevertheless, by this circumstance; viz., that the revenue statistics of the tract under discussion, shew a *descending* scale in regard to the income of the state, a product which under general rules, bears an approximately regular proportion to the amount of prosperity in a country. Nor, must I omit the fact, that the *Boksa* and *Tharoo* tribes are extremely migratory in their habits, and are peculiar in requiring at their several locations more land for their periodical tillage, than they can shew under cultivation at one time, or in one year. To these tribes, is in a great measure *now* left the occupation of the Terrai territory, so that *now* for every deserted village, there may be perhaps found a corresponding newly cultivated one, within the same area; and large spaces of waste may intervene, where under the present system, no room for contemporaneous cultivation is supposed to exist; the periodical waste or fallow, also, in that peculiar climate, presenting as wild and jungly an appearance as the untouched prairie. In the times, on the contrary, which I have advantageously compared with our own, the fickle and unthrifty races whom I have named, were not the sole occupants of the soil, and the number of contemporaneous settlements was therefore greater, and the extent of land required for each was less. I, therefore, come round in due course to the next fact, (the obverse of that first stated,) that, as bad government in the ordinarily habitable parts of the country introduced an extraordinary number of ploughs into the borders of the forest tract, so, the accession of the British rule, by affording a good government to Rohilcund, re-attracted the agricultural resources to that quarter, and proportionately reduced the means

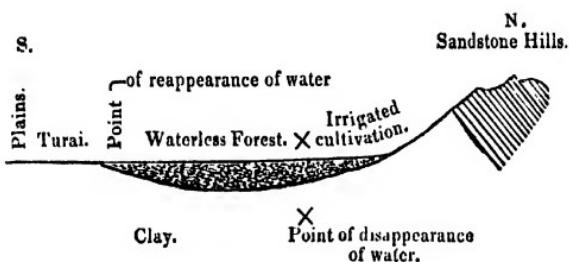
of tillage in the Terrai. Such is my general position ; but, local circumstances also added to the deterioration ; and amongst these, an allusion on my part is all that is necessary or proper to the hasty and perfunctory mode of settlement adopted in the earlier years of the British rule, to the disputes in and out of court, concerning *Zemindarry* rights between *Seeb Lall* and *Lall Sing* ; and again between the latter and his elder brother *Mahendra Sing*'s family ; to the continued bad police management ; and, perhaps more than all, to the neglect and difference of the English revenue officers, who were scared away from the tract by the bad reputation of its climate, and only occasionally attracted thither by its facilities for sport.

In fact, the sum of the whole matter is, in my opinion, this : that even long neglect in other quarters can by a change of system, be speedily remedied ; but, that in the peculiar region of which we are treating, a very brief period of neglect or bad management is sufficient to *ruin* the country. Its physical character has been well described by others, but more especially and directly in the recent Irrigation Report of Captain Jones, and incidentally in the lately discovered and published Geological Report by the late Captain Herbert.* Under the base of the hills, surface irrigation from the several streams that issue therefrom, can be carried on without difficulty to a certain distance on either side of them by means of water-courses taken off at different levels, this distance or point of non-irrigation being determined by the slope of the country, and the absorbing or retaining qualities of the soil, and consequently by the time of disappearance of water in the several rivers. Hence, in the *Upper Bhabur*, so long as an agricultural population can be found, extensive patches of fine cultivation† will always exist ; but, at wide intervals, and with but a short prolongation to the Southward. Then, succeeds the *okhur bhoomee*, or dry region of forest and prairie, beneath the rich mould and enormous beds of gravel of which, at an hitherto undiscoverable depth, flows the drainage of the lower mountains ; the point of re-appearance of water

* Journal Asiatic Society, Vol. XI, the map published with Vol. XIII.

† The superficial soil in the Bhabur when well irrigated, supplies admirable crops of wheat, mustard and the like ; but is said to be too light for sugar-cane, cotton and other staples ; my own opinion is, that every thing could be produced, if the cultivators were permanent and of an industrious race, instead of being only *hibernating Puharrees*.

in the river beds, and the rushing out of the numerous springs being determined by the thinning out of the porous gravelly detritus, and the approach of the clay, or *impervious stratum* to the surface, thus :



The *Lower Bhabur*, or special Terrai, succeeds, and reflection and Lower Terrai. observation both shew, that if left to itself, this region must become one of swamps and malaria, and only partial cultivation ; whereas, if carefully watched, its evils of climate may be vastly amended, and its agriculture be only limited by its amount of population. A careful guidance of the waters from their several sources would prevent the formation of the swamps on the lower edge of the forest. The rapid slope of the country causes the streams to push along the superficial gravel mixed with trees and vegetable mould, and thus to form at last an obstruction *a-head of themselves*. This causes numerous windings of the streams, and at every corner a back water swamp is produced, which would have had no existence, if the current had been carefully conducted, or if the obstructions in its course had been removed, or an opening through them been made. In the same manner the proper placing of the several *bunds* on the streams, and a proper attention to outlets of canals thus formed, would prevent the evils now arising from embankments which enrich one village, or set of villages, at the expense of the whole neighbourhood ; and from water-escapes, which irregularly flood all the adjacent lands, and create grass *hounds* and swamps for tigers, deer, and hogs, while they drive out the human inhabitant.

These are common illustrations, and are sufficient to prove my argument for the absolute necessity of official and even scientific attention being paid to the physical character of the Lower Terrai, the additional benefits of a good revenue management, and a good police being,

at the present period assumed. I trust that the force of this argument will not be weakened by its not being *original*. The improvement of the *forest-tract* can be effected by the cutting of broad roads through it to the several points of access to the hills, and by extension of the *Puharree* clearings at its northern edge by a better and more economical distribution of the available means of irrigation. But, it still remains a matter for science to determine, whether except in the case of large rivers, (for instance the Ramgunga and Kosillah,) which on account of their volume and force escape absorption into the gravel, any canals can be taken off from *common streams*, at their exit from the mountains, and carried continuously through the forest. If they can, I would be content to sacrifice some portion of the partial cultivation carried on by the Hillmen at the immediate foot of the hills, by means of their numerous separate water-courses. If they cannot be made so as to bring a *large and continuous portion* of the forest and prairie into cultivation, I am hardly prepared to recommend much interference with the present system of irrigation in the *Upper Bhabur*, however wasteful, in the mere attempt to prolong a mile or two further the *Puharree* cultivation, and to add to the number of villages, paying almost nothing to the State, while they decrease the pasture grounds required by the herdsmen, both of the plains and the hills, at that very portion of the forest where the means of supplying water to the cattle alone exists.* As, however, the subject of the *Kumaon Bhabur* as distinct from the *Rohilkund Terrai* will form the subject of a separate report in the ordinary course of my official duties, and, as the upper tract is quite prosperous enough not to require any immediate special remedies, I here drop my pen.

Almoragh, 9th October, 1844.

J. H. BATTEN,

Senior Assistant Commissioner, Kumaon Proper.

* The forest here alluded to, is almost utterly useless for timber, though its pasture grounds are admirable. All the valuable timber is now confined to the foot of the hills and to the lower range, and the *sissoo* islands in the river beds. This is a fact little known, but quite true.

The Osteology of the Elephant. From the India Sporting Review.

I am induced to take the following subject for my first essay in the pages of the India Sporting Review, (to which be length of days and unrivalled success,) by the simple fact, that of the engravings produced in Europe, affecting to be faithful representations of

“The huge earth-shaking beast,
The beast that hath between his eyes
The Serpent for a hand”—

Scarce one in the dozen does not outrage nature most unmercifully; of course I include under this head neither *all* illustrations of Zoölogy, nor the productions of artists, professional or amateur, resident in India: though in several lithographs after the latter, which have fallen under my inspection, I could point out errors, probably not existing in their original drawings while many of the former are radically wrong. The prevailing absurdity in the engravings I allude to, is giving the elephant *hocks* ! ! ! the perpetrators of which would appear to have adopted the idea (and selected their model accordingly) of the elderly Scotch lady in ‘*The Last of the Lairds*’ who exclaims, while admiring a painting of a tiger-hunt—“Eek! Sirs! wha'd ha'e thought it?—that y'r elephant, after a, shauld be naithing mair than a muckle pig wi a langer snoot,”—a deprecatory comparison truly of the animal on which Milton has deservedly bestowed the epithet “half-reasoning.” Leaving his mental capacity in such excellent hands, I proceed to the object I have in view, a delineation of his bodily peculiarities, and of the machinery by which such a mass of living flesh and blood performs it's functions.

It is well known that the sculptor or painter who should attempt the human form, without adequate knowledge of the osseous framework and its muscular clothing, would produce but a sorry resemblance of the paragon of animals! . In like manner, ignorance of the internal structure of the elephant, so unlike that of all other quadrupeds, has doubtless caused these numerous false drawings of it's external appearance, and which I presume to think the annexed outlines will serve to rectify. The design of the first was sketched

some years ago for my own guidance, and shortly afterwards compared (in doing which I had the assistance of a sporting friend, no other than our own Asmodeus) with the articulated specimen in the Museum of the Asiatic Society. In the same apartment were skeletons of other mammalia—*the Rhinoceros Indicus*, *Felis Tigris*, *Felis Leopardus*, *Sus Scrofa*, &c., and while viewed in Juxta-position with these, a casual observer might imagine the elephant deficient in the number of bones usually forming the legs. Not so, the comparative anatomist who detects the same plan regularly followed throughout all the class, varied only by the elongation, or otherwise, and arrangement of the carpal and metacarpal, tarsal and metatarsal bones, as also of the digital phalanges. The posterior extremities of our subject (due allowance being made for great difference in length and size) seem to approach more nearly to the inferior ones of the human skeleton than those of any other quadruped. The Vertical position of the sacrum adds to this similitude, while the lateral power bestowed by the articulation of the thigh and knee joints, is visible externally—as a favorite position of the animal, while tethered and at rest, is supporting the weight of his hinder quarters on one leg, while the other is thrown in a *stand at ease* manner across it, one foot resting carelessly upon the other.

Plate 1. The head, excepting the lower jaw, is drawn in section, showing the situation of the brain and its defences; also, the process of dentition, in which one, the foremost, grinder is seen to be superannuated and gradually disappearing; the next, the centre one, in present use, and the third descending to take the place of the last in due course. This singular system of decay and reproduction is said to occur eight times in the life of the individual.*

* I have now before me the skull of an elephant which died here about a year ago;—it presents the peculiarity of having no grinder on the right side of the lower jaw; whether this was a natural defect or the result of an accident is not known. If the latter, it must have happened many years ago, as the alveolus is entirely ossified over, a slight hollow alone appearing, while the corresponding grinder above, instead of having the usual jaggy polished under-surface, showing the arrangement of enamel and bony substance, is rounded and covered with the opaque cortical matter. Its predecessor, which is much reduced, and was attached to the head by only a single root, is also rounded below, but is slightly polished, with some of the enamel appearing.



Plate II.

Fig. 1.



Fig. 2



- A. Cavity of the brain.
- B. Space occupied by bony cells, between
- C. the outer, and
- D. the inner tablets of the skull.
- E. Opening of the nostrils.
- F. Alveolus of the tusk.
- G. Old molar in a state of diminution and decay.
- H. Perfect molar.
- I. Embryo molar, progressing forwards and downwards.
- K. Inferior maxillary.
- 1. Cervical vertebrae, 7 in number.
- 2. The ribs—19 on each flank.
- 3. Bones of the Sacrum.
- 4. The caudal vertebrae, 24, in number.
- 5. The Sternum.
- 6. The clavicles. (?)
- 7. The Scapula.
- 8. The humerus.
- 9. The ulna.
- 10. The radius.
- 11. The Carpus, comprising 7 bones.
- 12. The metacarpus, and interior digital phalanges, five in each foot.
- 13. The femur.
- 14. The tibia.
- 15. The fibula.
- 16. The tarsus.
- 17. The metatarsus and posterior digital phalanges, four in each foot.
- 18. The patella.

Plate II, Fig I. An elephant descending a bank of too acute an angle to allow of his walking down it laterally, which, were he to attempt doing, his huge body, soon exceeding the centre of gravity, would certainly topple over. His first manœuvre is to kneel down close to the edge of the declivity, having his chest upon the ground; one fore leg is then carefully passed a short way down the slope, and if there is no natural projection adapted for firm footing, a step is speedily kicked out of, or pressed into the soil, according to the state of dryness or moisture it may be in. This point gained, the other

fore leg is also brought down, and performs the same work a little in advance of the first, which is now at liberty to move still lower—when, first one and then the other hind leg is cautiously slid over the side, and the hind feet in turn occupy the resting-places made, used, and left by the fore ones; and so on, the course not being direct from top to bottom, but sideways, until the level be regained. This is done at more than an angle of 45, while the animal has the weight of a howdah, its occupant, his attendant and sporting apparatus, adding to the difficulty of the performance; and that in a much less space of time than would readily be imagined.

Plate II. Fig. 2. Represents the reverse of fig 1., viz., an elephant ascending a similarly steep bank by the same process, except the kneeling down at the commencement.

I had some idea of adding a third drawing, that of a complete figure of the elephant, undefaced by lines, dots, figures, or letters; but as I purpose sending you a series of Tiger-hunting Scenes, you and your subscribers (should my attempts be thought worthy of being submitted to the engraver or lithographer) will have specimens enough of the *Elephas Indicus* ere the Review be much older.

Dacca, Dec. 1844.

J. G. F.

P. S.—Since writing the above, I have received a Zoological work, which fully bears me out in the strictures with which I commenced this paper. It is lettered "Naturalist's Library. Mammalia, Vol. V., Elephants, &c." Many of the volumes of this work are well got up, and contain tolerably faithful illustrations of the letter-press: but here, again, the elephant meets with his usual misrepresentation: *Imprimis*,—The title-page presents us with a vignette purporting to be "The elephant of India, caparisoned," and behold a '*monstrum horrendum, informe ingens*,' with hocks of course whose forebears, after their kind, never saw the inside of the Ark, I'm very certain. But making some allowance for a vignette, turn we to the body of the book, and next find Plate II., "Elephant of India,"—differing from the vignette 'tis true, but not a whit nearer to nature;—*hocks* again, line of the belly horizontal, more mounds on his back than the Bactrian camel's, and length enough from proboscis to tail for an elephant and three-quarters. Plate III. "Elephant of India, caparisoned for hunting." Very faulty, but a visible improvement on

the foregoing:—and why? The plate is a pictorial plagiarism on one of Captain Mundy's “Pencil Sketches,” which has however undergone the change which Sheridan somewhere says is effected by literary appropriators on their pilfered ideas, “they treat them, as gipsies do stolen children, disfigure them, that they may pass for their own.” Here we have the ankle joints so prominent, and placed so high up the legs, as to assume all the appearance of hocks—the tail absurdly short, and the under outline of the body perfectly straight, whereas it should descend rapidly from the elbow joint of the fore leg to the knee of the hind one.

QUERIES RESPECTING THE HUMAN RACE, to be addressed to Travellers and others. Drawn up by a Committee of the British Association for the Advancement of Science, appointed in 1839, and circulated by the Ethnographical Society of London.

[The Editors have thought this paper of so much importance that they have lost no time in re-printing it, as pointing out to so many residents in India a kind of knowledge which they may so easily acquire and communicate, and which offers so many points of interest to every thinking mind. The more savage races of India from the Veddas of Ceylon to the Goands and the races of the Terraes, with the Singphos and Kariens of our Eastern Frontiers, to say nothing of the Coles, Dhangurs, Sontals and Goomsoor tribes, and many others, all offer fields of research, from which, undoubtedly, many scientific laurels are to be gathered, and eventually much useful knowledge and many humane results may arise.—Eds.]

At the meeting of the British Association held at Birmingham, Dr. Prichard read a paper “On the Extinction of some varieties of the Human Race.” He pointed out instances in which this extinction had already taken place to a great extent, and showed that many races now existing are likely, at no distant period, to be annihilated. He pointed out the irretrievable loss which science must sustain, if so large a portion of the human race, counting by tribes instead of individuals, is suffered to perish, before many interesting questions of a psychological, physiological and philological character, as well as many historical facts in relation to them, have been investigated. Whence he argued that science, as well as humanity, is interested in the efforts which are made to rescue them, and to preserve from oblivion many important details connected with them.

At the suggestion of the Natural Historical Section, to which Dr. Prichard's paper was read, the Association voted the sum of £5 to be

expended in printing a set of queries to be addressed to those who may travel or reside in parts of the globe inhabited by the threatened races. A Committee was likewise appointed by the same Section to prepare a list of such questions. The following pages, to which the attention of travellers and others is earnestly invited, have, in consequence, been produced. It is right to observe, that whilst these questions have been in preparation, the Ethnographical Society of Paris has printed a set of questions on the same subject for the use of travellers.* It has been gratifying to perceive the general similarity between the questions proposed by the French savans who compose that Society, and those which had been already prepared by the Committee; but the Committee is bound to acknowledge the assistance which, in the completion of its task, it has derived from the comprehensive character and general arrangement of the Ethnographical Society's list. The following queries might have been considerably extended, and much might have been added to explain the reasons and motives on which some of them are founded. Such additions would, however, have inconveniently extended these pages, and, in part, have defeated their object. The Committee has only further to express its desire that the Association may continue its support to the interesting subject of Ethnography, and that their fellow-members will aid in bringing these queries under the notice of those who may have it in their power to obtain replies. Britain, in her extensive colonial possessions and commerce, and in the number and intelligence of her naval officers, possesses unrivalled facilities for the elucidation of the whole subject; and it would be a stain on her character, as well as a loss to humanity, were she to allow herself to be left behind by other nations in this inquiry.

It will be desirable, before giving direct answers to the questions proposed in the following list, that the traveller should offer, in his own terms, a description of the particular group of human beings, which he may have in view in drawing up his list of answers, seeing that the replies, however accurate and replete with useful information, may fail in some particulars to give a complete idea of the people to whom they relate.

* Reprinted Jour. As. Soc. vol. x. p. 171.

Physical Characters.

1. State the general stature of the people, and confirm this by some actual measurements. Measurement may be applied to absolute height, and also to proportions, to be referred to in subsequent queries. The weight of individuals, when ascertainable, and extreme cases, as well as the average, will be interesting. What may be the relative differences in stature and dimensions, between males and females?

2. Is there any prevailing disproportion between different parts of the body? as, for example, in the size of the head, the deficient or excessive development of upper or lower extremities.

3. What is the prevailing complexion? This should be accurately defined, if possible by illustrative and intelligent example, such as by comparison with those whose colour is well known. The colour of the hair should be stated, and its character, whether fine or coarse, straight, curled, or woolly. The colour and character of the eyes should likewise be described. Is there, independently of want of cleanliness, any perceptible peculiarity of odour?

4. The head is so important as distinctive of race, that particular attention must be paid to it. Is it round or elongated in either direction, and what is the shape of the face, broad, oval, lozenge-shaped, or of any other marked form? It will contribute to facilitate the understanding of other descriptions, to have sketches of several typical specimens. A profile, and also a front view should be given. In the profile, particularly notice the height and angle of the forehead, the situation of the meatus auditorius, and the form of the posterior part of the head. It will also be desirable to depict the external ear, so as to convey the form and proportion of its several parts. The form of the head may be minutely and accurately described by employing the divisions and terms introduced by craniologists, and the corresponding development of moral and intellectual character should in conjunction be faithfully stated. So much of the neck should be given with the profile as to show the setting on of the head. The advance or recession of the chin, and the character of the lips and nose, may likewise be given in profile. The front view should exhibit the width of forehead, temples, and cheek-bones, the direction of the eyes, and the width between them: the dimensions of the mouth. When

skulls can be collected or examined, it would be desirable to give a view in another direction, which may even be done, though with less accuracy, from the living subject. It should be taken by looking down upon the head from above, so as to give an idea of the contour of the forehead, and the width of the skull across from one parietal protuberance to the other.

5. State whether the bones of the skull are thick, thin, heavy, or light. Is it common to find the frontal bone divided by a middle suture or not? Note the form of the outer orbital process, which sometimes forms part of a broad scalene triangle, with the vertex downwards. How are the frontal sinuses developed? Observe whether the ossa triquetra are frequent, or otherwise; whether there be frequent separation of the upper part of the os occipitis; the relative situation of the foramen magnum. In regard to the bones of the face, notice the position of the ossa nasi and unguis; the former sometimes meet nearly or quite on the same plane, whilst, in others, they meet at an angle. The former character is strongly marked in many African skulls. State the form of the jaw-bone, shape of the chin, and observe the angle of the jaw, the position and character of the teeth, and their mode of wear; and if they have any practice of modifying their form or appearance, let this be stated. The malar bones have already been noticed, but they may require a more minute description.

6. When the opportunity can be found, observe the number of lumbar vertebræ, since an additional one is said to be common in some tribes.

7. Give the length of the sternum as compared with the whole trunk; and also some idea of the relative proportion between the chest and the abdomen.

8. What is the character of the pelvis in both sexes, and what is the form of the foot?

9. The form of the scapula will also deserve attention, more especially as regards its breadth and strength; and the strength or weakness of the clavicle should be noticed in connection with it.

10. The internal organs, and blood-vessels will with greater difficulty be subjected to examination; but it may be well here to remark, that varieties in these may prevail locally in connection with race.

N.B.—Peculiarities may exist, which cannot be anticipated in queries, but which the observer will do well to notice amongst his answers to anatomical questions.

11. Where a district obviously possesses two or more varieties of the human race, note the typical characters of each in their most distinct form, and indicate to what known groups or families they may belong: give some idea of the proportion of each, and state the result of their intermixture on physical and moral character. When it can be ascertained, state how long intermixture has existed, and of which the physical characters tend to predominate. It is to be observed, that this question does not so much refer to the numerical strength or political ascendency of any of the types, but to the greater or less physical resemblance which the offspring may bear to the parents, and what are the characters which they may appear to derive from each: whether there is a marked difference arising from the father or the mother belonging to one of the types in preference to another; also whether the mixed form resulting from such intermarriage is known to possess a permanent character, or after a certain number of generations to incline to one or other of its component types.

12. Any observation connected with these intermarriages, relating to health, longevity, physical and intellectual character, will be particularly interesting, as bringing light on a field hitherto but little systematically investigated. Even when the people appear to be nearly or quite free from intermixture, their habits, in respect of intermarriage within larger or smaller circles, and the corresponding physical characters of the people, will be very interesting.

13. Do the natives speak a language already known to philologists, and if so, state what it is; and notice whether it exhibit any dialectic peculiarities, as well as the modifications of pronunciation and accentuation which it may offer. State also the extent to which this dialect may be used, if limits can be ascertained.

14. If the language be little if at all known, endeavour to obtain a vocabulary as extensive as circumstances will allow, and at least consisting of the numerals, the most common and important substantives*, the pronouns in all persons and numbers, adjectives expressive of the commonest qualities, and, if possible, a few verbs

* The names of mountains, lakes, rivers, islands, &c.

varied in time and person. The vocabulary should be tested by the interrogation of different natives, and more than one person should be engaged in taking it down from their mouths, to avoid, as far as may be, errors arising from peculiarities of utterance or defect of hearing. It is likewise of importance that the system of orthography be duly indicated and strictly adhered to.

15. Endeavour to take down some piece of native composition, such as the ordinary phrases employed in conversation, and any other piece of prose which may be attainable; and specimens of metrical composition if such exist. Though these would be of comparatively little use without translation, yet independently of this some importance is to be attached to the metrical compositions if they have a national character and are widely diffused; and, in this case, it might be possible to express some of their airs in musical characters. A specimen of known composition translated into their language, may also be given, such as the first chapter of Genesis, the fifteenth chapter of Luke's Gospel, and the Lord's Prayer.

16. Endeavour to ascertain whether the language is extensively spoken or understood, and whether there are different languages spoken by men having similar physical characters obviously connecting them as a race, or if differing somewhat in this respect, inhabiting a particular geographical tract. When such groups are said to possess different languages, endeavour, as far as possible, to ascertain their number, the sources whence each is derived, and the languages to which it is allied; and also the circumstances, geographical or political, which may account for these distinctions.

[For further information connected with the investigation of languages, reference is made to a short essay on this subject read to the Philological Society of London.]

17. Are there any ceremonies connected with the birth of a child? Is there any difference whether the child be male or female?

18. Does infanticide occur to any considerable extent, and if it does, to what causes is it to be referred, want of affection, deficient subsistence, or superstition?

19. Are children exposed, and from what causes, whether superstition, want of subsistence or other difficulties, or from deformity, general infirmity, or other causes of aversion?

20. What is the practice as to dressing and cradling children, and are there any circumstances connected with it calculated to modify their form; for example, to compress the forehead, as amongst the western Americans; to flatten the occiput, as amongst most Americans, by the flat straight board to which the child is attached; to occasion the lateral distortion of the head, by allowing it to remain too long in one position on the hand of the nurse, as amongst the inhabitants of the South Seas?

21. Are there any methods adopted, by which other parts of the body may be affected, such as the turning in of the toes, as amongst the North Americans; the modification of the whole foot, as amongst the Chinese?

22. How are the children educated, what are they taught, and are any methods adopted to modify their character, such as to implant courage, impatience of control, endurance of pain and privation, or, on the contrary, submission, and to what authorities, cowardice, artifice.

23. Is there any thing remarkable amongst the sports and amusements of children, or in their infantile songs or tales?

24. At what age does puberty take place?

25. What is the ordinary size of families, and are there any large ones?

26. Are births of more than one child common? What is the proportion of the sexes at birth and among adults?

27. Are the children easily reared?

28. Is there any remarkable deficiency or perfection in any of the senses? It is stated, that in some races sight is remarkably keen, both for near and distant objects.

29. To what age do the females continue to bear children? and for what period are they in the habit of suckling them?

30. What is the menstrual period, and what the time of utero-gestation?

31. Are there any ceremonies connected with any particular period of life?

32. Is chastity cultivated, or is it remarkably defective, and are there any classes amongst the people of either sex by whom it is remarkably cultivated, or the reverse, either generally or on particular occasions.

33. Are there any superstitions connected with this subject?
34. What are the ceremonies and practices connected with marriage?
35. Is polygamy permitted and practised, and to what extent?
36. Is divorce tolerated, or frequent?
37. How are widows treated?
38. What is the prevailing food of the people? Is it chiefly animal or vegetable, and whence is it derived in the two kingdoms? Do they trust to what the bounty of nature provides, or have they means of modifying or controlling production, either in the cultivation of vegetables, or the rearing of animals? Describe their modes of cooking, and state the kinds of condiment which may be employed. Do they reject any kinds of aliment from scruple, or an idea of uncleanness? Have they in use any kind of fermented or other form of exhilarating liquor, and, if so, how is it obtained? What number of meals do they make? and what is their capacity for temporary or sustained exertion?
39. Describe the kind of dress worn by the people, and the materials employed in its formation. What are the differences in the usages of the sexes in this respect? Are there special dresses used for great occasions? and, if so, describe these, and their modes of ornament. Does any practice of tattooing, piercing, or otherwise modifying the person for the sake of ornament, prevail amongst the people? N.B. Such modifications not to be blended with other modifications, used as signs of mourning, &c.
40. Have the people any prevailing characteristic or remarkable modes of amusement, such as dances and games exhibiting agility, strength or skill?
41. Are games of chance known to the people, and is there a strong passion for them?
42. Do the people appear to be long or short-lived? If any cases of extreme old age can be ascertained, please to state them. Such cases may sometimes be successfully ascertained by reference to known events, as the previous visits of Europeans to the country. Is there a marked difference between the sexes in respect of longevity?
43. What is the general treatment of the sick? Are they cared for, or neglected? Are any diseases dreaded as contagious, and how

are such treated? Is there any medical treatment adopted? Are there any superstitious or magical practices connected with the treatment of the sick? What are the most prevailing forms of disease, whence derived, and to what extent? Is there any endemic affection, such as goitre, pelagra, plica, or the like? With what circumstances, situations, and habits do they appear to be connected, and to what are they referred by the people themselves?

44. Where there are inferior animals associated with man, do they exhibit any corresponding liability to, or exemption from disease?

45. Do entozoa prevail, and of what kind?

46. What is the method adopted for the disposal of the dead? Is it generally adhered to, or subject to variation?

47. Are any implements, articles of clothing, or food, deposited with the dead?

48. Is there any subsequent visitation of the dead, whether they are disposed of separately, or in conjunction with other bodies?

49. What is the received idea respecting a future state? Does this bear the character of transmigration, invisible existence about their accustomed haunts, or removal to a distant abode?

Buildings and Monuments.

50. What are the kinds of habitations in use among the people? Are they permanent or fixed? Do they consist of a single apartment, or of several? Are the dwellings collected into villages or towns, or are they scattered, and nearly or quite single? If the former, describe any arrangement of them in streets or otherwise which may be employed.

51. Have any monuments been raised by the present inhabitants or their predecessors, and more especially such as relate to religion or war? State their character, materials, and construction. If they are still in use amongst the people, state this object, even if they should be of the simplest construction, and be little more than mounds or tumuli. If these monuments are no longer in use, collect, as far as possible, the ideas and traditions of the natives regarding them, and if possible, have them examined by excavation or otherwise, taking care to deface and disturb them as little as possible.

52. In these researches be on the look out for the remains of the skeletons of man or other animals, and, if discovered, let them be preserved for comparison with those still in existence.

Works of Art.

53. Let works of art, in metal, bone, or other materials, be likewise sought and preserved, and their similarity to, or difference from implements at present in use amongst the people of the district, or elsewhere, be noted.

54. When a people display their ingenuity by the extent or variety of their works of art, it will not only be desirable to describe what these are, but also the materials of which they are constructed, the modes in which these materials are obtained, the preparation which they undergo when any is required, and the instruments by which they are wrought. Such particulars will not only throw light on the character and origin of the people, but will, directly or indirectly, influence the commercial relations which may be profitably entered into when commerce alone is looked to. When colonization is contemplated, the facts contained in the replies to these queries will point out the mutual advantages which might be obtained by preserving, instead of annihilating, the aboriginal population.

Domestic Animals.

Are there any domestic animals in the possession of the people? Of what species are they? Whence do they appear to have been derived, and to what variety do they belong? Have they degenerated or become otherwise modified? To what uses are they applied?

Government and Laws.

55. What is the form of Government? Does it assume a monarchical or democratic character, or does it rest with the priests?

56. Are the chiefs, whether of limited or absolute power, elective or hereditary?

27. Is there any division of clans or castes?

58. What are the privileges enjoyed by or withheld from these?

59. What care is taken to keep them distinct, and with what effect on the physical and moral character of each?

60. What laws exist among the people? How are they preserved? Are they generally known, or confided to the memory of a chosen set of persons? What are their opinions and regulations in reference to property, and especially the occupation and possession of the soil? Does the practice of hiring labourers exist among them?

61. Have they any knowledge or tradition of a legislator, to whom the formation of laws is ascribed?

62. Do they rescind, add to, or modify their laws? and how?

63. Are they careful in the observance of them?

64. What are their modes of enforcing obedience, and of proving and punishing delinquency?

65. How are judges constituted? Do their trials take place at stated periods, and in public?

66. How do they keep prisoners in custody, and treat them?

67. What are the crimes taken cognizance of by the laws? Is there gradation or commutation of punishment?

Geography and Statistics.

68. Briefly state the geographical limits and character of the region inhabited by the people to whom the replies relate.

69. State approximatively the number of inhabitants. As this is an important, but very difficult question, it may not be amiss to point out the modes in which the numbers may be ascertained. The people themselves may state their number with more or less accuracy, but it should be known whether they refer to all ranks and ages, or merely comprehend adult males, who may be mustered for war, or other general purposes requiring their combination. In this case state the apparent proportion between adult males and other members of families. The number of habitations in a particular settlement may be counted, and some idea of the average numbers of a family be given. Where the people inhabit the water-side, the number and dimensions of their craft may be taken, and some idea of the proportion between the number of these and of the individuals belonging to them, may be formed. In drawing conclusions from observations of this kind, it will be necessary to have due regard to the different degrees of density or rarity in which, from various causes, population may be placed.

70. Has the number of inhabitants sensibly varied, and within what period?

71. If it have diminished, state the causes; such as sickness, starvation, war, and emigration. When these causes require explanation, please to give it. If the inhabitants are on the increase, is this the result of the easy and favourable circumstances of the people causing an excess of births over deaths; or is it to be assigned to any cause tending to bring accessions from other quarters? State whether such causes are of long standing, or recent.

72. Is the population generally living in a manner to which they have been long accustomed, or have new relations with other people, and consequently new customs and practices, been introduced?

73. If the people, being uncivilized, have come under the influence of the civilized state, to what people the latter belong, how they are regarded, and what is the kind of influence they are producing.* State the points of their good influence, if any, and those of an opposite character, as the introduction of diseases, vices, wars, want of independence, &c.

74. Is there any tendency to the union of races? how is it exhibited, and to what extent?

Social Relations.

75. What kind of relationship, by written treaty or otherwise, subsists between the nation and other nations, civilized or not? Have they any intercourse by sea with other countries? Do any of them understand any European language? Or are there interpreters, by whom they can communicate with them?

76. Are they peaceable, or addicted to war? Have they any forms of declaring war, or making peace? What is their mode of warfare, either by sea or land? their weapons and strategy? What do they do with the slain, and with prisoners? Have they any mode of commemorating victories by monuments, hieroglyphics, or preservation of individual trophies, and of what kind? Have they any national poems, sagas, or traditions respecting their origin and history? Where Euro-

* This question will comprise the existence of missions—the success or the want of it from causes connected with missionaries themselves or others.

peans have introduced fire-arms, ascertain the modes of warfare which have given place to them.

State whatever particulars respecting their origin and history are derived, either from traditions among themselves or from other sources.

Religion, Superstitions, &c.

77. Are the people addicted to religious observances, or generally regardless of them?

78. Do they adopt the idea of one great and presiding Spirit, or are they polytheists?

79. If polytheism exist, what are the names, attributes, and fables connected with their deities, and what are the modes in which devotions is paid to each? Are any parts of the body held sacred, or the reverse? Do they offer sacrifices, and are they of an expiatory character, or mere gifts?

80. Have they any sacred days or periods? fixed or moveable feasts, or religious ceremonies of any kind, or any form of thanksgiving or other observance connected with seasons?

81. Have they any order of priests, and if so, are they hereditary, elective, or determined by any particular circumstance?

82. Is the religion of the people similar to that of any other people, neighbouring or remote? If different, are they widely so, or dependent on particular modifications, and of what kind?

83. In what light do they regard the religion and deities of neighbouring tribes?

84. Is there any idea of an inferior order of spirits and imaginary beings,—such as ghosts, fairies, brownies, and goblins; and how are they described?

85. Have they any notions of magic, witchcraft, or second sight?

86. What ideas are entertained respecting the heavenly bodies? Have they any distinction of stars, or constellations? and if so, what names do they give them, and what do these names signify?

87. Are they in any manner observed with reference to the division of the year, and how?

88. If time is not divided by observations of those bodies, what other mode is adopted? and do observances connected with them rest with the priests or chiefs?

89. When the traveller, by personal acquaintance with the language, or by means of competent assistance from interpreters, can freely converse with the people, it will be desirable that he should form some idea of their amount of intelligence, their tone of mind with regard to social relations, as respects freedom, independence, or subserviency, and their recognition of moral obligations, and any other psychological character which observation may detect; and more especially such as may contribute to an estimation of the probable results of efforts to develope and improve the character.

RICHD. KING, M. D.

*a
27 Sackville St.*

JOURNAL

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"*On the Leiotrichane Birds of the Subhemalayas,*" by B. H. HODGSON, Esq.: with some additions and annotations,—*a Synopsis of the Indian Paro,—and of the Indian Fringillidae,* By E. BLYTH, Curator of the Asiatic Society's Museum.

LEIOTRICHANÆ.

Leiothrix, Swainson.—Bill short, strong, more or less conic, the culmen and gonys equally curved before the nares, and the toma scarpt: tip of upper mandible strongly inclined over the lower, with salient notch [?], but not Lanian [or Shrike-like]; of the lower obtuse, entire, and straight. Nares distinctly fosset, advanced, implumose, lateral; the aperture more or less lunated by the more or less hardened and scale-like tect. Rictus moderate, furnished with long but feeble bristles: nares also furnished with hairs. Wings short, round, firm, bowed, with five primaries graduated, the sixth and seventh equal and longest. Legs and feet very strong; tarse a third longer than middle toe and nail, and nearly or quite smooth: toes medial, unequal, depressed, the anterior basally connected, the outer more so and longer; the hind large and broad, *alone* exceeding the inner digit, and with its nail the outer, but not equal to the central toe and nail. Nails strong, compressed, falcate; hind largest. Tail short, lyrate, mucronate.

Type *Leiothrix furcatus?* [Swainson, or rather *sinensis*, being the No. 156, No. 72, NEW SERIES.]

Tanagra sinensis, Gmelin, founded on *la Mesange de Nankin* of Sonnerat, which is referred to *Parus* by Temminck, p. c. 287, fig. 1, a figure which is cited by Mr. Swainson, who assigns "India" as the habitat; and deducing his generic diagnosis from the present species, that systematist writes — "Tail moderate, deeply forked," this being a feature unnoticed in Sonnerat's description, which evidently refers to the species under consideration, wherein the form of the tail may be compared to that of a female black Grouse (*Tetrao tetrix*), but having its central pair of feathers a third shorter than the rest.] *L. calipyga*, Mihi [being also *Bahila calipyga*, Hodgson, *Ind. Rev.* 1838, p. 88; subg. *Calipyga*, *Ibid.*, *J. A. S.*, X. 29.] Above and flanks sordid vernal green [or olive-green, tinged with yellow on the crown]; below gamboge-yellow [the belly yellowish white]; outer margin and base of the primaries the same; centrals [i. e. secondaries] edged with sanguine; rest of alars and caudals black. Bill coral-red: legs fleshy-brown. Female with the caudals green like the back, and the central alars not edged with sanguine. Length six inches and a half, the bill five-eighths of an inch; wing two inches and nine-sixteenths; tail two and one-third; tarse to sole an inch and one-sixteenth; central toe and nail three-quarters of an inch; hind-toe five-eighths: weight about 1 oz. *Hab.* central and northern hilly regions [of Nepal]; feeds equally on grass-seeds, and upon insects and their larvae and pupæ. [The foregoing description of this bird refers to the newly moulted plumage, for as the feathers become old the colours fade very considerably, the green of the upper parts changing to plain grey, the yellow of the throat and breast to a dull buffy hue, and the yellowish tinge of the abdominal region disappears altogether. Analogous losses of colour occur, to a greater or less extent, in the other species, but particularly in the next; and in like manner the bright yellow on the wings of *Garrulax chrysopterus* and certain allied species, fades to whitish-grey, and the *Cissa sinensis* (v. *Kitta venatorius*, Gray), which at first is of a beautiful and deep sea-green, becomes gradually of a pale verditer-blue, while the sanguine hue bordering its large wing-feathers changes to dull leaden-grey; the same being more or less observable in all the various forms (so common on the Himalaya) which have wing-markings of the same general character as those of *Leiothrix*, *Garrulax* (v. *Ianthocincla*), &c.]

SUBGENERA?

Fringilliparus, Mihi. [*Mesia*, Hodgson, *Ind. Rev.* 1838, p. 34; and since *Philocalyx*, H., *J. A. S.*, X. 29.] Bill longer, wings longer [certainly not in proportion, nor even quite so long], not bowed, more acuminate, with but four primaries graduated, the two next being equal and longest. Tail medial, broad, firm, even, with the tips of the feathers nearly squared. [N. B. With several specimens both of this and the preceding type before me, I can perceive no character whatever that should entitle them to separation, and do not even recognise the distinctions of form indicated by Mr. Hodgson, their chief diversity consisting in the shape of the tail, which in the present species is scarcely truncated, and has the outermost feathers a little shorter than the rest.]

Type, *F. argentauris*, Mihi. [*Mesia argentauris*, Hodg., *Ind. Rev.* 1838, p. 88.] Body slaty, paler below, and smeared green above; [in new plumage, tinged with green on the upper parts, the nape dark golden-fuscous, throat and breast bright gamboge having a cast of red, and under-parts deeply tinged with yellow:] cap black, enveloping the silvery ears: [feathers at] base of bill yellow, and the outer margin of primaries and lateral caudals the same: upper and lower tail-coverts and base of wings [i. e. a large patch at the base of the primaries and secondaries,] sanguine: legs and bill pale fleshy-yellow. Female with the tail-coverts yellow [fading to fulvous or tawny]. Length seven inches to seven and a quarter; of bill three-quarters of an inch; wing three and one-sixteenth; tail two and three-quarters to three inches; tarse an inch and one-sixteenth; central toe and nail thirteen-sixteenths; hind-toe ten-sixteenths.

Ioropus, Mihi. [*Siva*, Hodgson, *Ind. Rev.* 1838, p. 88; and since *Heniparus*, *Ibid.*, *J. A. S.*, X. 29.] Bill various, more slender and Meruline, or shorter and more Parian; wings short; feet as in *Zosterops* or *Iora*, with short antea toes, but tarse high as in the last. Tail more or less elongated, and gradated from sides and centre as in *Parus*; broad, firm, and obtusely tipped, or narrow and frail and wedge-tipped.

Types. *I. strigula*, *cyanouoptera*, and *nipalensis*.

I. strigula; [*Siva strigula*, Hodgson, *Ind. Rev.* 1838, p. 89; and figured as *Muscicapa* (*Siva*, Hodg.) *strigula* by M. Adolphe Delessert, in the 2d. or Zoological part of his *Souvenirs d'un Voyage dans l'Inde*, p. 24,

and pl. VIII.*] Length six inches and a half, bill five-eighths of an inch; tail two inches and seven-eighths; wing two and three-quarters; tarse an inch and one-sixteenth; central toe and nail eleven-sixteenths; the hind three-sixteenths. Head with a full crest of sordid gamboge; body above slaty smeared with green; below gamboge more or less di-

* In the same work are figured and described, or only described :—

1. As *Chloropsis curvirostris*, Swainson, ("Menag."), the *Phyllornis Hardwickii*, v. *Ch. Hardwickii*, Jardine and Selby, v. *chrysogaster*, McClelland and Horsfield, v. *cyanopterus*, Hodgson, v. *auriventris*, Guérin, (*Magasin de Zoologie*, 1840, *Ois.*, pl. 17).

2. As *Cypselus (Chætura, Hodgson.) nudipes*, Hodgson, *J. A. S.*, V. 779, the *Pallene macropterus*, v. *Ch. macroptera*, Swainson, *Zool. Ill.*, v. *leuconotus*, *Mag. de Zool.*, 1840, *Ois.* pl. 20. (Is this identical with the Australian species—*P. caudacuta*, (Lath.), to which, according to Mr. Strickland (*Ann. and Mag. N. H.* 1843, p. 337), must be referred "*Chætura australis*, Stephens, *Hirundo fusca*, Stephens, and *Ch. macroptera*, Swainson"?

3. As *Francolinus Hardwickii*, Gray, the *Perdix lunulosa*, Valenciennes, v. *Fr. nivosa*, *Mag. de Zool.*, 1840, *Ois.* pl. 18; if indeed this be not also the Cingalese, *Perdix bicalcaratus* of Pennant, which I greatly suspect. The form, to which *P. spadiceus* also belongs, I regard as constituting a very distinct genus—*Galloperdix*, Nobis.

4. As *Crateropus Lafresnayii*, Ad. Deless., the *Garrulax cachinnans*, or *Cr. cachinnans*, Jerdon, *Madr. Jl.* 1839, p. 255, with figure; having been, it would appear, also named *Delesserti* by M. de la Fresnaye.

5. As *Cr. griseiceps*, *Rev. Zool.* 1840, p. 101, the *Cr. Delesserti*, Jerdon, *Madr. Jl.* 1839, p. 256.

6. As *Muscicapa rufula*, de la Fresnaye, the *Saxicola nigrorufa*, Jerdon, *Madr. Jl.* 1839, p. 366.

7. As *Pica bottanensis*, Ad. Deless., *Rev. Zool.* 1840, p. 400, the *P. megaloptera*, Blyth, *J. A. S.*, XI, 193 (1842).

And the following new species are given :—

1. *Turdus (Merula) nigropileus*, de la Fresnaye; a Neilgherry species distinct from *T. simillimus*, Jerdon, and which has since been likewise obtained by that naturalist: allusion being made in the description to the two Himalayan Blackbirds, *T. pæcilopterus*, Vig., and *T. collaris*, Sorel, *Rev. Zool.* 1840, p. 2, which latter is doubtless the *T. albocinctus*, Royle, *Ill. Him. Bot.* (1839), termed *albicollis* on that author's plate, which name belongs to another species.

2. *Prinia flavigularis*, (Ad. Deless.,) described as an *Orthotomus*, and previously in *Rev. Zool.* 1840, p. 101.

In the class of mammalia, the Gaour, *Bos gaurus*, v. *Bibos cavifrons*, Hodgson, is figured as *Bibos frontalis*, (Lambert,) which name, however, refers to the Gayal of the trans-Brahmapooter territories, *B. gavæus* of Colebrooke, v. *B. sylhetanus*, F. Cuv., which is a very different animal: and the Wild Dog of the Neilgherries is erroneously referred to *Canis primævus*, Hodgson, which latter I shewed to M. Delessert, and he at once acknowledged their distinctness, as may be likewise seen by comparing M. Delessert's figure with that of the Himalayan animal in *As. Res.* xviii, pt. ii, 236. The only other Indian quadruped figured is a small Neilgherry squirrel, *Sc. Delesserti*, Gervais, which is nearly allied to *Sc. McClellandii* common at Darjeeling, and *Sc. insignis* of Java.—E. B.

luted; alars and caudals black, passing marginally and laterally into yellow; edge of central alars fiery; outer web of tertials blue-grey; chin orange; throat barred black from a black moustache, large and irregular in shape: legs and bill sordid bluish-grey. Sexes alike. Distinguished by its quasi-Parian bill, its crest, and broad composed caudals [also conspicuously by its barred throat]. It passes into the next form or *Proparus*, yet retains the notch on the bill vaguely.

I. cyanouropterus. [*Siva cyanouoptera*, Hodgson, *Ind. Rev.* 1838, p. 88; *Leiothrix lepida*, McClelland and Horsfield, *Proc. Zool. Soc.* 1839, p. 162.] Length six inches and a quarter; bill eleven-sixteenths of an inch; tail two inches and a half; wing two and seven-sixteenths; tarse seven-eighths; central toe and nail ten-sixteenths; hind eight-tenths of an inch. Lutescent-brown, passing to blue-grey towards the head; crown and visible part of closed alars and tail cobalt-blue; tertials and tail tipped white, the outer caudals white internally; legs fleshy; bill dusky yellow; sexes alike. Remarkable for its long, straight, and Thrush-like bill; no crest; tail like the last. [The under-parts are much lighter-coloured than the back, and have a faint lake tinge; rump rufescent; and forehead streaked with black. Inhabits also the hill ranges of Assam.]

I. nipalensis. [*Siva nipalensis*, Hodgson, *Ind. Rev.* 1838, p. 89.] Length five inches and five-eighths to five and seven-eighths; bill five-eighths; tail two inches and a half; wing two and a quarter; tarse fifteen-sixteenths; central toe and nail five-eighths; hind half an inch. Above olivaceous-brown, below [faintly] lutescent; head [cap and nape] slaty, with dull black long superciliary lines; legs and bill sordid fleshy or horn. In form like *strigula* as to bill and crest, but distinguished for its narrow, rounded, and somewhat rigid tail: with it leads to *Proparus*. [This species and the next are also remarkable for the uniform brown colouring of their wings, all the rest having the wings more or less variegated. It likewise inhabits Arracan.]

Siva occipitalis, Blyth. Length about five inches, of wing two and a half, and tail two inches; bill to gape nine-sixteenths, and tarse seven-eighths of an inch. Colour dull brownish olive-green above, the shafts of the dorsal and scapular feathers pale; below much lighter and rufescent, the throat whitish, the feathers of the fore-neck having dark shafts: crown, nape, and lower tail-coverts, ferruginous-brown, which also tinges

the flanks : coronal feathers considerably elongated ; and the occiput beneath the crest, white : bill black, and legs yellowish-brown. Inhabits Darjeeling.]

Proparus, Mihi. [not *Proparus*, Hodgson, *J. A. S.*, X. p. 29, which refers to the next group, or *Certhiparus*, Hodgson, hodié.] Bill quite Parian and entire, but the nostrils are implumose and furnished with an arched scale. Head crested. Wings short, bowed, with four quills gradated, and the three next longest. Tail narrow and cuneate as in the last. Tarse elevate and strong. Anteal digits not shortened : hind lengthened, and with its great nail (which is equal to the digit,) much exceeding the laterals, and nearing the middle toe and nail : nails large but moderately curved. [In a second species referred to this division by Mr. Hodgson, but received subsequently to the present paper, *Pr. chrysotis*, H., the tarse is longer and more slender, and the hind claw less developed, but greatly exceeding the others.]

Type *Pr. vinipectus*, Mihi. [*Siva vinipectus*, Hodgson, *Ind. Rev.* 1838, p. 89.] Length four inches and three-quarters ; bill seven-sixteenths of an inch ; tail under two inches ; wing two inches and one-eighth ; tarse fifteen-sixteenths ; central toe and nail eleven-sixteenths ; hind ten-sixteenths. Above brown, passing into rusty on the rump and outer webs of the alars next the body, and of the caudals [towards their base], both of which are dusky-black externally, and the *primaries* have hoary edges. Below albescens, sordid towards the vent ; wine-tinted on the breast ; a white and a black line above each eye. Legs and bill fleshy-brown. Distinguished by its perfectly Parian bill, without trace of notch, and by its longer but less falcate nails.

[*Pr. chrysotis*, Hodgson. Partakes of the aspect of *Orites* (*Parus*, L.) *caudatus*. Upper parts and throat ash-grey, tinged with yellow on the rump ; ear-coverts silvery, with a faint lutescent cast ; under-parts bright yellow ; a longitudinal streak of rich orange-yellow on the wing, formed by the margins of the secondaries ; and the outer and graduated primaries narrowly edged with yellow ; inner edge of the tertaries margined with white, and secondaries having a white spot at tip ; bill dusky-plumbeous ; and legs pale. Length about four inches and a half ; of wing two inches ; and the middle tail-feathers the same ; tail much graduated : bill to gape barely half an inch ; tarse thirteen-sixteenths ; hind toe and claw nine-sixteenths].

Certhiparus, Mihi. [Olim *Minla*, Hodgson, *Ind. Rev.* 1838, p. 42; changed to *Proparus*, H., *J. A. S.*, X. 29, which latter name is now transferred to the preceding group.] Bill somewhat lengthened, slender, and inclining to arch, but the tip of the upper mandible strongly notched; base depressed; rictus moderate and nearly smooth. Nares large, advanced, tenuirostral; the aperture lunately lineated by a large and soft incumbent membrane: tongue simple, forked. Wings round, acuminate; fifth longest, the first and second much, the third and fourth less, gradated. Tail medial or short, and round with ovoid tips, the webs of which are open and harsh. Tarse equal only to mid-toe and nail: toes medial, compressed, very unequal, and basally much connected; the hind very large and alone exceeding the outer fore, but not broad, nor its nail so long as the digit: nails much curved and compressed.

Types *ignitinctus* and *castaniceps*, Mihi.

C. ignitinctus. [*Minla ignitincta*, Hodgson, *Ind. Rev.* 1838, p. 32; *Leiothrix ornata*, McClelland and Horsfield, *Proc. Zool. Soc.* 1839, p. 162.] Head and neck black and white in broad alternate masses; the crown, and a line through the eye from the bill, black; and a broad superciliary space, with the throat, white: mantle luteous-olive merged [in the male?] in vinous across the upper back: body below yellow [or yellowish:] alars and caudals black; prime alars and caudals margined and tipped crimson; the rest white-edged: legs horn-yellow; bill black above, horn below. Female less in size and duller-hued. Length five inches and a quarter; bill ten-sixteenths of an inch; tail two inches and a quarter; wing two and five-eighths; tarse thirteen-sixteenths; central toe and nail three-fourths of an inch; hind ten-sixteenths. [Occurs also in Assam.]

C. castaniceps. [*Minla castaniceps*, Hodgson, *Ind. Rev.* 1838, p. 33.] Above olive, with a bright chestnut cap streaked with white; below lutescent: ears and moustache black; centre of alars margined with rusty; outer primaries with hoary: legs fleshy; bill dusky-horn. Length five inches; bill nine-sixteenths of an inch: tail an inch and thirteen-sixteenths; the wing two and a quarter; tarse seven-eighths of an inch; central toe and nail eight-sixteenths, the hind nine-sixteenths of an inch. Somewhat deviates by its straighter bill and shorter narrower tail with wedged tips, but has the quasi-Certhian feet with large compressed

thumb exceeding the outer fore, and *with its nail* nearing the central. [It is by no means nearly allied to the preceding species.]

The curious will find all these birds carefully described, long ago, in the 'India Journal of Science'; but the subject is worth recurring to, and is attempted to be treated now so as to shew more accurately the curious gradation of form. In this rich accession to the *Leiotrichane* of Swainson, we have great means of illustrating that family, which seems to be a singular combination of *Parus* with the long-legged Finches on the one hand, and the Certhians on the other. The structure and habits, on the whole, are nearer to *Parus*, into which genus our *vinipectus* passes almost absolutely. Others remind us by their short toes of *Iora*, *Zosterops*, and the clinging *Brachypodans*; while the Certhian structure is represented very fully in the bill and feet of *ignitinctus*, and less palpably yet distinctly so in its tail; and the tails of *vinipectus* aforesaid, as well as of *nipalensis*, are of the scansorial model.

Leiothrix as a genus may embrace the whole; but I think the quasi-Finch—*argentauris*, the quasi-Ioran or short-toed, and the quasi-Certhian,—forms, deserve at least subgeneric separation. Indeed how could one define them in a single genus? All these birds are foresters, and more or less gregarious: their food consists almost equally of hard grass-seeds and small grains (wherein they resemble the Finches), and of hard and soft, perfect and imperfect, insects (wherein they agree with *Parus*;^{*}) and the character of the stomach and intestines is of a mixt type, between the typical Finches and the Tits.

They creep and climb among foliage and large flowers, and the Finch-like ones perch on the standing stalks of large grasses and small grains, just like the Carduelines. These (*Philocalyx*) are the greatest seed-eaters, and the *Certhipari* the least so, the latter being admirable climbers. They make half pensile semi-globular nests, well compacted, and placed at a moderate height on umbrageous trees or large shrubs in the forests, and are all confined to the northern and central hilly regions [of Nepal], being very rare in the southern hilly region, and wholly unknown to the plains. The thick-billed Finches and Tits have

* The true *Parus* devour oleaginous seeds with avidity; piercing a hole, for example, in the husk of a hemp-seed, and thus extracting the kernel: and I have remarked that *P. atter* and *P. palustris* of Europe are very partial to sunflower-seeds.—E. B.

mostly the same location; but some of both of these are found in the lower hills and plains, especially of the Finches, as the *Tooti* or Rosy Finch [*Erythrocercus erythrura*], which, by the way, seems to me a distinct type leading from *Pyrrhula* to *Linota*.* The *Gandums* or Buntings are likewise found in the plains; though there the European [forms of] Finches are properly represented by the Weavers, and the Amadines,—the *Bayas* [*Ploceus*, v. *Euplectes*, Sw.], *Lauls* [*Estrela amandava*], *Moonias* [*Amadina*, v. *Lonchura*, Sykes, v. *Munia*, Hodgson], &c. of Indian speech.

Emberizæ are commonly hill birds, and *Pari* almost, or quite, exclusively so. I have four species of the former and twelve of the latter genus!

May, 1843.

P. S.—Adopting Swainson's views, one might justify the above division of our Leiotrichane birds by shewing that they form a circle analogous to the various tribes of the *Insessores*, thus:—

Tribes of <i>Insess.</i>	Analogical characters.	Genera and subg. of <i>Leiotrichaneæ</i> .
<i>Conirostres.</i>	{ Wings and feet perfect. Food various.	<i>Fringilliparus</i> . [<i>Mesia</i> .]
<i>Dentirostres.</i>	{ Wings rounded. Insects chiefly.	<i>Leiothrix</i> . [olim <i>Bahila</i> , II.]
<i>Fissirostres.</i>	Feet imperfect.	<i>Hemiparus</i> . [<i>Siva</i> .]
<i>Tenuirostres.</i>	{ Bill slender, curved, large soft nares.	<i>Certhiparus</i> . [<i>Minla</i> .]
<i>Rasores, or Scan-</i> <i>sores.</i>	{ Bill entire, short; tail ri- gid; hallux enlarged.	<i>Proparus</i> .

At least it will be allowed to be pretty evident that *Certhiparus* is the analogue of *Mniotilla*, and *Hemiparus* of *Zosterops*; but as Swainson has made these respectively the scansorial and suctorial types, the above distribution is probably in fault, and in fact is but a hasty glance of the subject in this view, which is purely theoretical and perhaps unsound. [The decidedly Leiotrichane genus *Pteruthius* is here omitted altogether, though composed of two Himalayan and Nepalese species, viz. *Pt. rufiventer*, nobis, *J. A. S.* XI, 183, and XII, 854, and *Pt. erythropterus*, v. *Lanius erythropterus*, Vigors, and of Gould's 'Century,' noticed also in XI, 183.]

* This bird is perfectly true to the form of the American *Purple Finch* of Wilson, which is the type of *Erythrocercus*, Bonap.: the group consisting of *Linnets* with tumid bills, in which respect alone they appear to me to approximate to the Bullfinches.—E. B.

The *Leiothrix signata*, McClelland and Horsfield, *Proc. Zool. Soc.* 1839, p. 162, is identical with *Siphya auricularis*, (Hodg.) Blyth, *J. A. S.* XII, 940, and must accordingly now range as *S. signata*.

Another Himalayan bird referred to the *Leiotrichane* by Mr. G. R. Gray, in the 2d edition of his 'List of the genera of Birds' (p. 45), is *Sylviparus modestus*, Burton, *Proc. Zool. Soc.* 1835, p. 154;* but I suspect the identity of this with a species sent as a *Parus* by Mr. Hodgson, and which does not appear to me to differ in any marked degree from *Parus*, further than in its style of colouring, and in having a shorter tail. The generic diagnosis supplied by Mr. Burton accords with the species in question, except that the expression "*rostrum brevissimum*" conveys the idea of a still shorter bill than occurs in the bird before me, of which I draw up the following description:—

Sylviparus modestus (?), Burton, *loc. cit.*; *Parus seriophrys*, Hodgson, *MS.* Length about three inches and five-eighths, of which the tail measures an inch and three-eighths; wing two inches and one-eighth; bill to gape three-eighths; tarse nine-sixteenths of an inch. (*S. modestus* is stated to measure four inches, of which the tail occupies an inch and a quarter; and tarse half an inch.) Colour that of the *Phylloscopus* group, or olive-green above, paler and dingy below; the base of the primaries externally edged with yellowish-white: head distinctly crested. Nepal.

Of the remaining eleven species of *Parus* alluded to by Mr. Hodgson, four are figured in Gould's 'Century of Himalayan Birds,' viz.

P. monticolus, Vigors, *P. Z. S.* 1831, p. 22.

„ *xanthogenys*, *Ibid.* p. 23.

„ *melanolophus*, *Ibid.*

„ *erythrocephalus*, *Ibid.*

* Other species described at the same time were *Athene* (v. *Noctua*) *Brodiei* = *Ath. tubiger*, (Hodgson,) *As. Res.* XIX, 175, and *J. A. S.* XI, 163; *Phanicura McGregorii* = *Niltava fuliginenter*, H., *Ind. Rev.* 1837, p. 650; *Sylvia?* *castaneo-coronata* = *Tesia flaviventer*, H., *J. A. S.* 1837, p. 101; *Sylvia Burkii* = *Culicipeta Burkii*, Nobis, *J. A. S.* XII, 968, v. *Muscicapa bilineata*, Lesson, v. *Cryptolopha auricapilla*, Sw. (Menag.); *Ægitalus flammiceps*, probably a *Stachyris*, *J. A. S.* XIII, 379; and *Picumnus innominatus* = *Vivix nipalensis*, H., *J. A. S.* VI, 107, and XII, 1005. To *Tesia cyaniventer*, H., must be referred *Saxicola?* *olivea*, McClelland and Horsfield, *Proc. Zool. Soc.* 1839, p. 161; and there is an Abyssinian species of this group figured as *Troglodytes micrurus*, by Ruppell.

Others are described by Mr. Hodgson in the 'India Review' for 1838, p. 37 : viz.

P. atriceps, Horsfield, v. *P. nipalensis*, H., which, with *P. xanthogenys* and *P. melanolophus*, extends into the hill regions of Southern India, the present species likewise occurring in the Malay countries.

P. sultaneus, Hodgson, v. *Melanochlora flavocristata* and *M. suamatrana*, Lesson and La Fresnaye, vide *J. A. S.* XII. 955 : a remarkable species which also extends into the Malay countries.

And the following may now be added :—

P. dichrous, Hodgson. Length about five inches ; of wing two and a quarter, and tail an inch and seven-eighths ; bill to forehead under three-eighths of an inch ; tarse three-quarters of an inch. Upper-parts uniform brownish-grey, the occiput adorned with a slightly recurved crest of unpointed feathers, nearly an inch long ; entire under-parts dull rufescent-brown, the forehead and cheeks tinged with the same : bill dusky ; and feet lead-coloured. Nepal.

P. æmodius, Hodgson. Very closely allied to *P. ater*, but the bill decidedly more slender and compressed ; the black also descends more upon the breast, and spreads laterally, circumscribing the sides of the neck ; and the back is less tinged with olivaceous, while the belly would appear to be more rufescent, than in its European representative. Nepal.

P. iouschistos, Hodgson. Length about four inches and a quarter, of which the tail measures two inches, and has its outer three feathers graduated, and the middle pair a quarter of an inch shorter than the next ; wing two inches and one-eighth ; bill to forehead, through the feathers, three-eighths of an inch ; tarse five-eighths. Colour ashy above, tinged with olive, the winglet and coverts of the primaries black ; a very broad black streak over each eye (as in *Orites caudatus*), and the central line of the head, with the sides of the head and entire under-parts, clear reddish-isabelline ; graduated outer tail-feathers more or less tipped and edged externally with whitish : bill black ; and feet pale brown. Nepal.

The last species, with *P. erythrocephalus*, should perhaps be rather arranged in *Orites* vel *Mecistura*, but *P. iouschistos* has a longer and more *Parus*-like bill, and both serve to connect *Orites* with *Parus* by an easy gradation. The European *Orites caudatus* differs much in habit from the true *Parus*, being exclusively insectivorous, and also never placing its foot upon its food while picking it to pieces with the bill in the

Jay-like or Crow-like manner continually resorted to by the true *Pari*; and it is likewise celebrated for its beautifully constructed large domed nest, which is placed in a forked branch, whereas the *Pari* nidificate in holes and cavities: but I remember M. Audubon telling me, that he had discovered some cases of intermediate habit even in this particular, one or two North American species constructing a regular domed nest with inside a suitable cavity in a tree; and the same is not unlikely to be the case with these two Himalayan species.

The above ten species of Himalayan *Pari* (apud Hodgson,) are all which I am acquainted with at present; but there is a "*P. (?) minutus,*" Jerdon, of Southern India, described by the latter naturalist, which appears to have the plumage of *Sylviparus*, but of which "the bill is larger, and less robust, than in the Tits, in general approaching that of *Ægithalus*." *Madras Journal*, XI, 8. (*Non vidi.*)

I was next about to endeavour to indicate Mr. Hodgson's four *Emberizæ*; but as I dislike giving isolated notices, I will venture to offer a general

SYNOPSIS OF INDIAN FRINGILLIDÆ,—

Which will afford the opportunity of making known several new species discovered by Mr. Hodgson, and be far more acceptable to the Ornithologist than an indiscriminate medley of previously undescribed species.

To begin with the genus *Ploceus* (v. *Euplectes*, Sw.), three species of which are common in Bengal and respectively more or less so in other parts of India.

1. *Pl. philippinus* (?); thus marked with doubt because there is reason to suspect its distinctness from its representative in the Philippine Islands, or *Loxia philippina*, Lin., founded on the *Grosbec des Philippines* of Brisson, or *Toucnam-courvi* of Buffon (*Ois.* III, 462): the latter author refers to Brisson for a description of the male; but in his notice of the *Baglafecht* of Abyssinia (*Pl. baglafecht*, Vieillot, *Loxia philippina*, var., Lath.), he alludes to a black spot on each side of the head of the Philippine species, which certainly does not apply to the

Indian bird under consideration (some notice of which occurs in *J. A. S.* XI, 872). *Pl. philippinus* is included among the birds of Sumatra by Sir S. Raffles, and among those of Java by Dr. Horsfield; but in a recent communication Mr. H. E. Strickland informs me, that "the *Fringilla philippina* of Dr. Horsfield's catalogue is not the true *philippina*, but I have not yet decided," he adds, "what it is." Hence I suspect that the Javanese bird will prove to be the original *philippina*, rather than the allied Indian species, which latter has always been so designated, and is probably thus alluded to by Mr. Strickland as the "true *philippina*." Should it require a name, it might be termed *Pl. baya*. It extends its range throughout India, and is the only species of the genus which Mr. Hodgson has forwarded from Nepal.*

2. *Pl. manyar*; *Fringilla manyar*, Horsf., *Lin. Tr.* XIII, 160, apud Strickland *in epistola*: *Euplectes flaviceps*, Swainson, *Menag.*, and probably *Ploceus flaviceps*, Cuv., *Par. Mus.*, as mentioned in Lesson's *Traité*; (*nec Pl. flaviceps*, Sw., which now ranks as *Hyphantornis stictonotus*, (A. Smith) G. R. Gray;) *Euplectes striatus*, Nobis, *J. A. S.* XI, 873, and XII, 181 (*bis*); and probably *Coccothraustes chrysocephala*, Vieillot, which is referred to the next species in the *Dict. Class.* W. India, Bengal, Assam and Malay countries. Constructs a non-pensile nest among reeds, with an incipient tubular entrance; as I am informed is also very commonly the case with the preceding species, when resorting to similar localities.

3. *Pl. bengalensis*; *Loxia bengalensis*, Lin. (founded on the *Yellow-headed Indian Sparrow* of Edwards): *L. regina*, Bodd.; *Euplectes albirostris*, Sw. *Menang*.—Bengal; less common in S. India.

Next to the Baya or Weaver group (so largely developed in Africa) may be arranged the Sparrows :—

* A letter just received from Mr. Strickland informs me, that—"Horsfield's so called *Pl. philippinus* from Java, is bright yellowish above, back striped with dusky; wings dusky, each feather margined whitish; tail dusky, narrowly tipped with whitish. Beak shorter than in *bengalensis*, the cheeks and throat blackish with a yellow streak dividing that on the lower jaw. Lower parts deep yellow. No doubt a well known species, though I cannot at the moment give the right name."

1. *Passer domesticus* (?), Lin. ; *P. indicus*, Jardine and Selby, *Ill. Orn.*, 1st. series, pl. CXVIII. I have had no opportunity of comparing European and Indian specimens of the common Sparrow of the respective regions; but it has always seemed to me, judging from recollection, that the upper parts of the male are somewhat redder, the under parts whiter, and that the females are decidedly paler altogether, in the Indian than in the British Sparrow: but the Indian bird certainly is not "smaller in all its proportions," as stated by Messrs. Jardine and Selby; nor are the upper parts of the male nearly so red as represented in their plate. The common Sparrow of India is generally distributed over the country, even in the hottest districts; and Mr. Crawfurd notices its abundance in the capital of Siam; with "more than its European familiarity. In proceeding towards the equator," he adds, "it appears here for the last time, not to my knowledge being found in any Asiatic country to the south of Siam, except in a few spots where it has been introduced by Europeans." ('Embassy to Siam and Cochin China,' p. 432.)

2. *P. pyrrhonotus*, Nobis, n. s. Closely resembles the last in plumage, but is readily distinguished by its inferior size, its conspicuously smaller bill and feet, and by having the rump feathers dull maronne, instead of greyish-olive. Length about four inches and three-quarters, of wing two and five-eighths, and tail two and one-eighth; bill to forehead five-sixteenths, and to gape seven-sixteenths of an inch; tarse barely five-eighths, middle toe and claw five-eighths. Obtained, together with the preceding, at Buhawalpore, in Scinde, by the late Sir Alexander Burnes. The female I have not seen.

3. *P. flaveolus*, Nobis, n. s. With a close resemblance in its markings to the common Sparrow, except that the back is not streaked, this pretty species is distinguished by its smaller size and predominating yellowish plumage. The bill somewhat inclines to be slender, and in this respect, as well as in the absence of all streakiness above, some approach is shewn to *Gymnoris flavicollis*. In the male, the top of the head, nape, and rump, are of a dull light green, inclining to yellowish on the forehead; the cheeks and sides of the forehead are tolerably bright yellow, and the rest of the under parts are sullied yellow: streak from eye to mouth, and the usual patch on the throat and fore-neck.

deep black : sinciput, mantle, and anterior third of wing, chestnut-bay, passing to maronne at the bend of the wing : there is a whitish bar on the wing, formed by the tips of the smaller range of coverts ; and the rest of the wing, with the tail, is dusky, the feathers margined with yellowish-brown. Bill black (in the breeding season) ; and legs brown. The female is nearly uniform pale brown above, darker on the mantle, and having the whitish bar on the wing somewhat narrower ; supercilium, cheeks, and under parts, dull yellowish ; and bill light brown. Length five inches, or nearly so ; of wing two and three-quarters, and tail two inches : bill to forehead seven-sixteenths, and tarse five-eighths. From Arracan, where procured by Capt. Phayre.

4. *P. pyrrhopterus* ; *Fringilla pyrrhoptera*, Lesson, *Zoologie du Voy. de M. Belanger*, p. 271. (*Non vidi.*) " Size of the common Sparrow. Head and neck spotless rufous-brown ; the mantle bright rufous, with black central streaks to the feathers ; shoulder deep maronne, bordered by a small oblique white line ; the middle wing-coverts black, edged with rufous and maronne, and the rest of the wing pale ashy externally, and brownish on the inner barbs of the feathers : under parts rufous-grey, the throat reddish-grey, with a black patch commencing on the lower part of the neck : bill and tarse yellowish [but the former doubtless black during the breeding season as in the other species]. Female grey-brown, above silky, with brown central streaks to the feathers of the mantle ; below of a blonde-grey throughout : wings ash-grey with a white ray on the shoulder, but no maronne." Described to inhabit the Coromandel coast, and especially the neighbourhood of Pondicherry ; but the species has not been obtained by Mr. Jerdon.

5. *P. cinnamomeus* ; *Pyrgita cinnamomea*, Gould, *Proc. Zool. Soc.* 1835, p. 83, and noticed in *J. A. S.* XI, 108. Inhabits the Upper Provinces of Hindooostan.

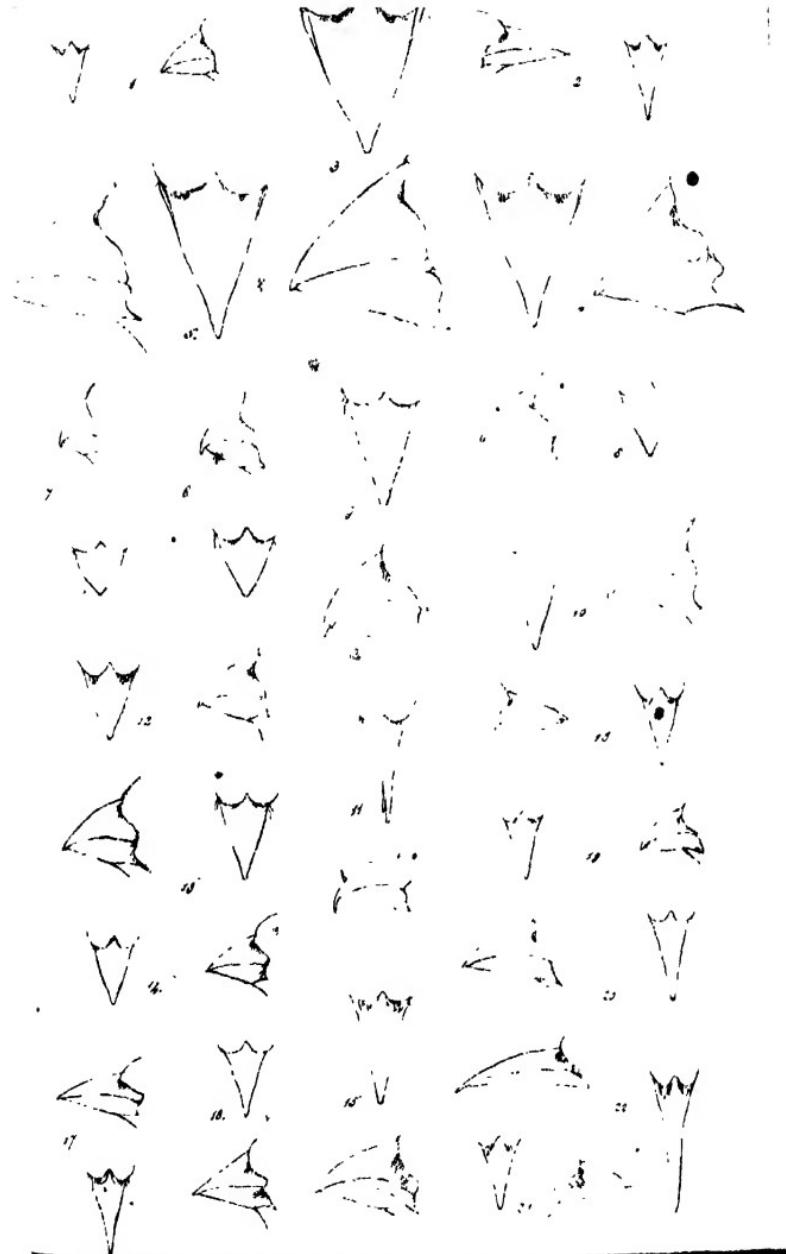
6. *P. montanus* ; *Fringilla montana*, Lin. This British species is common in the Himalaya, and extends eastward to China and Japan : it takes the place of the common Sparrow in Chusan. But a more unexpected locality for this bird to inhabit, is the island of Ramree, Arracan, whence fine specimens have been forwarded to the Society by Capt. Abbott. This Sparrow is remarkable for the female and young resembling the adult male in plumage, all being clad in a dress analogous in colouring to that of the adult males only, of the other species.

7. *P. (?) concolor*, Jerdon, *Madr. Journ.* XI, 28 : perhaps *Emberiza olivacea*, Tickell, *J. A. S.* II. 578, which specific name would have the priority. (*Non vidi.*) According to Mr. Jerdon, this bird "does not exactly agree with the characters of *Pyrgita* [*i. e.* *Passer*], having the bill more turgid, and with the commissure slightly sinuated. The third quill is shorter than the two first, and the inner toe is shorter than the outer one ; its claws moreover are less curved. Colour uniform light ash-brown above, still paler below (indeed almost white at chin and vent), and darkish on the quills and tail. Length six inches ; wing three inches and three-eighths ; tail two and a quarter : tarse rather more than seven-tenths ; bill at front four-tenths. Irides brown : bill brown above, yellowish below ; legs flesh-coloured yellow." The only specimen obtained by Mr. Jerdon was shot on the ground in an open plain, along with a lot of the *Coryphidea baghara*, p. 961 *Hab. S. India*.

Gymnoris, Hodgson, *n. g.* Differs from *Passer* in having the beak more elongated, slender, and *Carduelis*-like ; it being more slender than in restricted *Fringilla*.

G. flavicollis ; *Fringilla flavicollis*, Franklin, *P. Z. S.* 1831, p. 120 ; referred to *Ploceus* by Col. Sykes, *P. Z. S.* 1832, p. 94, and with more propriety to *Pyrgita* vel *Passer* by Mr. Jerdon.* India generally, though

* Mr. Strickland remarks, in his recent letter to me, "I consider *Fringilla flavicollis* to be a true *Passer*. It is one of the many instances, among the *Fringillidæ*, of the variable amount of development of the beak in the same genus. Its style of plumage is completely that of *Passer*, and the yellow spot on the throat resembles that of *Fringilla petronia* which I also consider a *Passer*. *Fringilla flavicollis* is certainly not a *Ploceipasser*, wanting the spurious quill found in all the *Ploceinae* ; still less is it a *Ploceus*." To this may be added that its nest and eggs, as described in Mr. Jerdon's catalogue, are quite those of *Passer*, the former being widely different from that of *Ploceipasser*. Mr. G. R. Gray, however, in his illustrated work on the genera of birds, now in course of publication, includes this bird among the species of *Ploceus*, following Col. Sykes, and he also refers to *Ploceus* the *Fringilla erythrocephalus*, Gm., which is decidedly a *Hyphantornis*, G. R. Gray (*v. Ploceus apud Swainson*) ; there is some considerable difference between the beaks of either of these species and that of *Pl. capensis*, which deviates in the opposite manner from the type of *Ploceus* : still I agree with Mr. Strickland in his appreciation of the systematic value of various strongly marked modifications of the beak, observable in several natural divisions among the *Fringillidæ*, and indeed have expressed my opinion on the subject in the course of the present paper. Had Mr. Hodgson not separated *Gymnoris* from *Passer* as above, I should scarcely have myself ventured upon doing so.



<i>Zen pyrrhopterus.</i>	<i>Propyrrhula subhema</i>	<i>Pyrhospiza juncea</i>
<i>Morus flavigollis.</i>	<i>Hemitelesiza testacea</i>	<i>Trochilus Audubonii</i>
<i>Thraustes melanoxanthos</i>	<i>Trochilus cyanurus</i>	<i>Procarduelis nipalensis</i>
<i>urnipes.</i>	<i>Loxia humatajuna</i>	<i>Chrysomiris spinosus</i>
<i>Citrioides.</i>	<i>Syrphospiza erythrena</i>	<i>Pyrhulalda grisea</i>
<i>Pyrrhula nivalis</i>	<i>R. undulata</i>	" "

I have not hitherto met with it in Lower Bengal. Mr. Hodgson obtained it in Nepal, and Sir A. Burnes in Scinde.

I next pass to the Moonahs,—*Amadina*, Swainson, v. *Lonchura*, Sykes, v. *Loxigilla* (in part), Lesson, v. *Munia*, Hodgson; *Spermestes*, Swainson, apud Jerdon.

1. *A. malacca*; *Loxia malaca*, Lin.: *Munia rubronigra*, Hodgson, *As. Res.* XIX, 153; *Lonchura melanocephala*, Horsfield, *P. Z. S.* 1839, p. 163. Common throughout the country.

2. *A. maja*; *Loxia maja*, (nec *Fringilla maja*,) Lin.; *Malacca Gros-beak*, Edwards. I include this species on the authority of Mr. Frith, who assures me that he has now and then observed it in different parts of Bengal, but not commonly, nor in large flocks like the others, two or three only having been seen by him together. It is common in the Malay countries.

3. *A. pectoralis*, Jerdon, *MS.*; *Spermestes*, No. 103 (*bis*), *Madr. Journ.* No. XXX, p. 171. South of India.

4. *A. acuticauda*; *Munia acuticauda*, Hodgson, *As. Res.* XIX, 153. Nepal.

5. *A. striata*; *Loxia striata*, Latham: *Fringilla leuconota*, Tem. Indian peninsula; Arracan.

6. *A. punctularia*; *Loxia punctularia*, Lin.: *Fringilla nisoria*, Tem.; *Munia lineoventer*, Hodgson, *As. Res.* XIX, 154. Common throughout the country.

7. *A. malabarica*; *Loxia malabarica*, Lin.: *Lonchura cheet*, Sykes, *P. Z. S.* 1832, p. 95; *Loxia bicolor*, Tickell, *J. A. S.* II, 578. Also generally diffused.

Estrelda, Swainson; *Loxigilla* (in part), Lesson. The Waxbills. Of this extensive genus, I know only of two Indian species, which are by no means closely allied.

1. *E. amandava*; *Fringilla amandava*, Lin.: *F. punicea*, Horsf., *Lin. Trans.* XIII, 160. Occurs in enormous flocks in many parts of the country.

2. *E. formosa*; *Fringilla formosa*, Lath. Central India.

The foregoing three groups, — of Weaver-finches, — of Sparrows, — and of Moonahs, Amaduvats and Waxbills, — are very distinct from any of the following genera, and appear to me to range most naturally

in the order in which I have placed them.* We now come to the more typical Finches, which have endless mutual affinities, and are most difficult to arrange in anything like a satisfactory series.

Coccothraustes, Brisson. Grosbeaks. The three Himalayan species are remarkable for their black and yellow plumage, in which respect, and perhaps others, they approximate the *C. vespertinus* of North America. Each of them, however, presents peculiarities in the modification of the beak, and each likewise differs in the character of plumage proper to the female sex.

1. *C. melanozanthus*, Hodgson, *As. Res.* XIX, 150: male figured in Mr. G. R. Gray's illustrated work on the genera of birds, but the beak made to appear too much elongated, the colour of the upper parts too black, and the tail too much truncated. As compared with the European *C. vulgaris*, the beak is not longer, but is much broader, and more bulged (or *Pyrrhuline*), and the basal denticulation of the upper mandible is strongly developed. It is probably the largest Finch in existence.

2. *C. carnipes*, Hodgson, *As. Res.* XIX. 151. The beak of this fine species approaches to the *Pyrenestes* form, being much less bulged than in the preceding, and a good deal compressed towards the tip; the basal denticulation very decided.

3. *C. icterioides*, Vigors, *P. Z. S.* 1831, p. 8; Gould's 'Century', pl. XLV. Beak more elongated than in the others, or rather more drawn out towards the tip; and approaching most nearly in form to that of *C. vulgaris*. This species would seem to be allied to the Chinese *C. melanura*.

Hæmatospiza, Nobis, n. g. Bill nearly as in *Guiraca*, Sw., or *Pyrrhula*.

* Mr. Strickland remarks, in *epistola*,—" An excellent distinction between the *Ploceinae* and *Fringillinae* was pointed out by Swainson, viz. the spurious quill in the former, wanting in the latter. On this ground I refer all the *Amadina* tribe (which possess this quill) to the *Ploceinae*." The character here mentioned would retain the Sparrows with the *Fringillinae*, and it seems to hold good throughout the two groups: but the *Alaudinae* vary in this respect, as the spurious quill occurs in *Mirafra*, in *Pyrrhulauda*, and also in *Cethilanda*, while it is absent in all or most of the rest. I cannot, however, quite agree with Mr. Strickland in referring the *Amadina* series to the *Ploceinae* as a major division, but would retain it as a distinct and corresponding supergeneric group, and I much incline to the same opinion, as regards the separation of both the Sparrows and the Buntings from the *Fringillinae*.

rhuline in form, but more elongated, the tip of the upper mandible curving distinctly downward over the lower, with a minute but distinct notch at the bend : wings as in *Corythus*, reaching to the middle of the rather short tail : feet adapted for arboreal habits.

H. boetonensis; *Loxia boetonensis*, Lath. :* *L. indica*, Gm., nec Lath. : *Corythus sepahi*, Hodgson, *As. Res.* XIX, 151. Himalaya. Examples of this brilliant species are now and then brought for sale to Calcutta. I suspect that it is allied in form to *Guiraca ludoviciana*.

Pyrrhula, (Antiq.) Mæhring. The Bullfinches.

1. *P. nipalensis*, Hodgson, *As. Res.* XIX, 155. Himalaya.
2. *P. erythrocephalus*, Vigors, *P. Z. S.* 1831, 174; Gould's 'Century,' pl. XXXII. Himalaya.

Pyrrhuloides, Nobis, *n. g.* This curious form connects the Pyrrhuline with the Bunting form of bill, and presents some appearance of an affinity with the *Ploceus* group. As viewed from above, the beak is bulged as in *Pyrrhula*, but not quite so short and broad ; and the lateral aspect is that of a stout *Emberiza* bill, having the tomiae of the mandibles much inflected, and the upper one similarly scooped, while the lower is proportionably thickened : the tip of the upper a little overhangs that of the lower mandible : nostrils basal, and concealed by short reflected plumes. Wings of mean length, having the second, third, and fourth primaries subequal and longest. Tarse as long as the middle toe, the feet formed for perching, the two lateral toes nearly equal, and the claws moderate, the anterior somewhat straight.

P. epaulettæ; *Pyrrhula epaulettæ*, Hodgson, *As. Res.* XIX, 156. Of this species I took the following description from specimens taken to England by Mr. Hodgson. Male wholly brownish-black, excepting an orange or golden-saffron patch occupying the posterior half of the crown with the occiput, and the axillary plumes under the wing which are similarly coloured. Female spotless reddish-brown, brightest on the belly and flanks, greater wing-coverts, and tertaries ; the forehead and neck grey ; coronal patch, with the ear-coverts, dull greenish-saffron ; axillaries as in the male ; primaries and tail dusky ; and the inner webs of the uppermost tertaries are more or less white, a trace of which also occurs in the male. Bill of both dusky-horned, and feet

* Probably meant for *boettanensis*, or *boetticensis* as more elegantly rendered.

brown. Length about five inches and three-quarters, of wing three inches, and tail two and a quarter; bill to forehead seven-sixteenths of an inch, and tarse eleven-sixteenths. Himalaya, and I believe rather uncommon.

Propyrrhula, Hodgson, MS. This connecting form has the beak of a true *Pyrrhula*, though not quite so short as in *P. vulgaris* and *P. erythrocephalus*; while the plumage and colouring ally it to *Corythus* and *Erythrospeiza*, the former being, however, a degree less firm, wherein it approximates the true *Pyrrhula*. It can only be arranged satisfactorily as a separate division.

P. subhemachalana; *Corythus subhemachalus*, Hodgson, *As. Res.* XIX, 152. Himalaya.

From *Propyrrhula* the genus *Erythrospeiza* would conduct us by an easy gradation to the Linnets and allied forms; but the remarkable genus *Corythus* branches off from the present group, and leads us direct to the very curious group of Crossbills, *Loxia*, of which *L. curvirostra* occurs in Afghanistan, and the following new species in Nepal:—

L. himalayensis, Hodgson, MS. Distinguished from *L. curvirostra* by its very inferior size, being smaller than *L. leucoptera*; the bill also is as slender as in *Carduelis*, but deeper in conformity with the generic characters of the Crossbills. Length about five inches and a half, of wing three to three and a quarter, and tail two inches; bill (in a straight line) half an inch. Plumage as in *L. curvirostra* and *L. pytio-psittacus*.

Erythrospeiza, Bonap.; *Hæmorrhous*, Swainson. The birds of this division are essentially Linnets with more or less tumid bills.

1. *E. erythrina*, (Pallas): *Coccothraustes rosea*, apud Vieillot; described as “*E. rosea*?” in *J. A. S.* XI, 461. India generally, being the only representative of the present great series of northern Finches upon the plains of India.

2. *E. rodopepla*; *Fringilla rodopepla*, Vigors, *P. Z. S.* 1831, p. 23; male figured in Gould's ‘Century,’ pl. XXXI, fig. 1 (the lower figure in the plate). Bill less *Pyrrhuline* than in the preceding species, more so than in the next. Length about six inches and three-quarters, of wing three and one-eighth, and tail two and three-quarters.

margins to the feathers; below light yellowish-brown, each feather with a dark central line; a broad pale supercilium reaching to the occiput, and another pale line from the base of the upper mandible. Himalaya.

3. *E. rodochroa*; *Fringilla rodochroa*, Vigors, *P. Z. S.* 1831, p. 23; male figured in Gould's 'Century,' pl. XXXI, fig. 2, but the middle of the crown erroneously represented as of the same pale rosy colour as the eye-streak and a slight frontal band. Beak scarcely more bulged than in *Linota cannabina*, and chiefly so as viewed from above. Length about five inches and three-quarters, of wing two and three-quarters, and tail two and three-eighths. Female paler and more decidedly streaky than that of the last species, especially paler upon the rump and upper tail-coverts, and with the light supercilium much less distinct and contrasting with the feathers above and below it: in the female of *E. rodopepla*, these last are dark and contrast strongly with the broad pale supercilium. Himalaya.

We might next pass to the Linnets; but there is a long-winged and more terrene form, with narrower and more elongated beak than in the last, which cannot be introduced better than in this place, and which constitutes the division.

Pyrrhospiza, Hodgson, *MS.* Bill conical, elongate, with a slightly curved outline above and below, somewhat compressed, and tapering evenly to the tip as viewed from above; the gony arched: wings long, reaching to more than half the length of the tail, which is also moderately long; the first four primaries subequal, the second and third being rather the longest. Feet adapted for ground habits, the toes rather long, with large and arched claws, especially that on the hind-toe.

P. punicea, Hodgson, *MS.* Length about seven inches and a half, of wing four and a half, and tail three and one-eighth; bill to forehead five-eighths of an inch, tarse seven-eighths, middle toe and claw an inch, hind toe three-quarters of an inch: upper-parts nearly uniform dusky-brown, the feathers margined paler; forehead and rump, with the cheeks, ear-coverts, and the under-parts excepting the abdominal region, roseate in winter, brightening to rich crimson in the breeding season, and varying to orange-saffron*; flanks and abdomen coloured

* A variation more or less frequent in the species of *Loxia*, *Corythus*, *Propyrrhula*, *Erythrospeza*, *Linota*, &c.

like the back; bill dark horny, and feet dusky-black. Female devoid of the red, having the forehead, cheeks, fore-neck, and breast, more or less fulvescent, each feather marked with a blackish mesial streak, widening at the tip; belly and lower tail-coverts dingy. Himalaya.

A second species of this division not improbably exists in the *Fringilla sanguinea* of Gould, *P. Z. S.* 1837, p. 127, received from Erzeroum. The form would seem allied to *Montifringilla* of Brehm, and holds the same relationship to the *Erythrosppiza* group, which *Montifringilla* does to the restricted *Fringillæ*, as exemplified by the British Chaffinch and Bramble-finches. The next is an analogous long-winged modification of the true Linnets.

Fringillauda,* Hodgson, *As. Res.* XIX, 158. This may be described as a Linnet with very long wings and tail, and somewhat elongated beak. The plumage is remarkable for the absence of any rosy colouring.

Fr. (v. Montifringilla?) nemoricola, Hodgson, *loc. cit.* Himalaya.

Procarduelis, Hodgson, *MS.* If the *Erythrosppiza rodochroa* approaches so closely to the true Linnets that it might even be classed with them, did not the division *Erythrosppiza* exist to claim it as an aberrant member, so the present form might include the sub-division of Redpole Linnets (*Rubricapilla* of Brehm,) were it not that this falls better under true *Linota*, as exemplified by *L. cannabina*, which again is directly connected with the Redpoles by the intervention of *L. montium*. The present form is indeed an *Erythrosppiza* with a slender *Carduelis* bill, and exhibiting a marked affinity for the Redpole Linnets; but it will not bear to be admitted into either of the established subdivisions.

Pr. nipalensis; *Carduelis nipalensis*, Hodgson, *As. Res.* XIX, 157: *Linota saturata*, Nobis, *J. A. S.* XI, 192. The *Linota fusca*, Nobis, *ibid.* p. 193, so nearly approximates to the female of the present species, to judge from my description of it, that I shall here provisionally refer it to *Pr. nipalensis*, although my impression (from recollection) still is that it constitutes a distinct species, referable to true *Linota*: this question must remain in abeyance until the *L. fusca* can be verified on additional specimens.

Carduelis, Stephens. The Goldfinches. I have been assured that

* Spelt *Fringalanda* in the original, evidently a mistake.

as many as three species of true Goldfinches, allied to the European species, and similarly adorned with crimson around the base of the beak, inhabit Chinese Tartary, and at least one I believe occurs at Darjeeling; but I have never chanced to see either species in any collection from the Himalaya, though the two following are described to inhabit the range.

1. *C. caniceps*, Vigors, *P. Z. S.* 1831, p. 23; Gould's 'Century,' *pl. XXXIII*, fig. 1, and more correctly represented in Royle's 'Illustrations of the Botany &c. of the Himalaya mountains,' *pl. VIII*; Gould's figure being much too dark, and together with that of Royle, having the wings too short, and the fore-neck and breast too uniformly embrowned, at least than in an Afghan specimen from which I took the following description.—“Differs most obviously from *C. communis* in the absence of any black upon the head, excepting between the bill and eye. Length about four inches and three-quarters, of wing three and a quarter, and tail two and one-eighth; bill to forehead five-eighths, and tarse half an inch. Upper-parts light greyish-brown, greyer on the head and neck; band crossing the front of the neck, with the sides of the breast, the same: forehead and around the bill crimson; and wing black, marked with bright yellow, and with white on the extremity of the outer edge of the tertaries, as in the European species; tail likewise similar to that of *C. communis*: the rump, upper and lower tail-coverts, belly, middle of breast, and around the crimson of the throat and sides of the head, are white: beak pale carneous with a black tip; and legs pale.”

2. *C. Burtoni*, Gould, *P. Z. S.* 1837, p. 90. “*C. fronte et regione circum-oculari pulchrè roseis; vertice genisque nigris; corpore obscurè fuscenti-roseo, alis externè nigris, singulis plumis plùs minus've albo ad apicem notatis; ala spuria albâ; rectricibus caudæ nigris, duabus intermediis ad apicem albis, duabus proximis longius ad apicem albis, reliquis albâ notâ internâ ad basin excurrente, ornatis; rostro, pedibusque pallidè fuscis.* Long. tot. $6\frac{1}{4}$ unc.; rostri $\frac{5}{8}$; alæ $3\frac{7}{8}$; caudæ $2\frac{1}{2}$; tarsi $\frac{3}{4}$. Himalaya. This species departs in some respects from the other members of the genus, particularly in the robust form of the beak, which is slightly angulated at the base: the form of its wings and tail, together with their peculiar markings, however, clearly points out that it is only an aberrant species of that group.”

Chrysomitris, Boie. The Siskins. The only Himalayan Siskin I know, like the Goldfinch last described, is remarkable for its thickened beak, approximating it to *Ligurinus*, Brisson, or the Greenfinches; one species of which, inhabiting the western coast of S. America, the *L. xanthogrammica*, G. R. Gray, presents a close approach on the part of the Greenfinches to the Goldfinches, the Siskins, and also to the Linnets, the form of its beak scarcely differing from that of the Himalayan Siskin, or

Chr. spinoides; *Carduelis spinoides*, Vigors, P. Z. S. 1831, p. 44; Gould's 'Century,' pl. XXXIII, fig. 2.

With the Siskins I terminate the series of Indian true Finches; and next in succession would come the Greenfinches, which would bring us back to the Grosbeaks with which we commenced; but this circle might be formed quite as satisfactorily in various other ways, the transitional forms of the present series being so numerous and completely intermediate, that all minute classification of them must be, in various instances, more or less arbitrary. By way of assistance to the student, I annex a plate with representations of the beaks of most of the species here comprised: but it must be remembered that it is not the beak alone, but the *ensemble*, which is our guide in the systematic arrangement of the *Fringillidæ*. In various most natural minor groups of this family, the same variety of modifications of the bill present themselves again and again, even to the Bullfinch, Grosbeak, and Goldfinch, extremes of form; as is especially well exemplified by the very peculiar group of short-tailed Finches so extensively developed in the Galapagos islands; and in the instance of the common northern Snowfleck (*Plectrophanes nivalis*) and the Alpine Snowfinch (*Montifringilla nivalis*), we find the closest approximation in general characters combined with a very striking diversity in the conformation of the beak, which in the one case is that of a Bunting, and in the other that of a restricted *Fringilla*; the affinity of the birds themselves being further manifested even by the seasonal changes of colour which take place in the beak, however dissimilar its form, for in both of these birds it turns quite black at the breeding season.* Were we to follow the indications

* Mr. Strickland, in his recent letter to me before referred to, alludes to "the many cases among the *Fringillidæ*, in which the form of beak must give way to the preponderance of other characters, and especially to the style of colours in the plu-

furnished by the beak alone, we should have to arrange various most incongruous species together, which in their affinities are much further removed apart than are the Snowfleck and Alpine Snowfinch, with dissimilar beaks; but it will not do, on the other hand, to disregard important distinctions in the form of this part, even when the rest of the structure is in accordance, and hence it appears impossible to arrange into intelligible minor groups the enormous series of the *Loxidæ* and *Fringillidæ* of the old systematists, without recognising as many and as minute divisions as have been adopted in this synopsis. I now pass to the genus.

Emberiza. The Buntings: of which the Indian species are referred to a group, *Euspiza*, by Mr. G. R. Gray, consisting of the more slender-billed species generally; but the limits of which, apart from restricted *Emberiza*, I cannot at all recognise, and shall therefore retain them under the latter title.

1. *E. Lathami*, Gray, *Zool. Misc.*, I, p. 2; *E. cristata*, Vigors, *P. Z. S.* 1831, p. 35; *E. subcristata*, Sykes, *P. Z. S.* 1832, p. 93, (the female); *E. erythroptera*, Jardine and Selby, *Ill. Orn.*, 1st series, pl. CXXXII; *E. nipalensis*, Hodgson, *As. Res.* XIX, 157: type of *Melophus*, Swainson. More elevated parts of India generally, but chiefly the Himalaya.

2. *E. melanocephala*, Scop.; *Fringilla crocea*, Vieillot; *Xanthornis caucasicus*, Pallas; *Emberiza granativora*, Menitries; *Tanagra melanictera*, Guldenstadt. S. India.

3. *E. aureola*, Pallas; *Fringilla pinetorum*, Lepech.; *Emberiza sibirica*, Gm.:* Himalaya, Arracan.

4. *E. fucata*, Pallas; *E. lessbia*; apud Tem., nec Gmelin; *E. cia*, apud Jerdon, vide *J. A. S.* XI, 601. Bengal, Indian peninsula.

5. *E. icterica*, Eversm., apud G. R. Gray, who figures it as *Euspiza icterica*. Central and western India.

6. *E. flavigollis*; *Mirafra flavigollis*, McClelland and Horsfield, *P. Z. S.* 1839, p. 163, which species Mr. Strickland informs me pertains to the present genus. Assam.

7. *E. Buchanani*, Nobis; *Fringilla jamjohari*, Buch. Hamilton's draw-

image, of which," he adds, "I know no more striking instance than the *Emberiza palustris vel pyrrhuloides* (though I see, Gray makes these into two species), the beak of which is wholly unlike that of an *Emberiza*, yet in all other respects the bird almost exactly resembles *E. schœniculus*."

* I have copied the synonyms of *E. melanocephala* and *E. aureola* from Mr. G. R. Gray's work.

ings; probably *E. hortulana*, apud Sykes, *P. Z. S.* 1832, p. 93. Would appear to be closely allied to *E. hortulana*, but differs in having the head, neck, and streak descending from the lower mandible ash-grey instead of dull green. Indian peninsula.

8. *E. sordida*, Hodgson, *MS.* Presumed female about five inches and a half in length, the wing two and a half, and tail two and a quarter; bill to forehead nearly half an inch, and tarse three-quarters of an inch. General hue of the upper parts dull olive-greenish, the feathers of the crown and back partially tinged with rufous, having medial dusky streaks; alars and greater wing-coverts also margined with rufescent-brown, and the two greater ranges of wing-coverts tipped with dull whitish: throat, belly, and under tail-coverts, whitish-yellow, sullied on the breast, and marked with dusky streaks on the flanks and sides of the fore-neck: upper mandible and tip of the lower one dull horny, the rest pale; and legs also pale. Nepal. Described from a specimen taken to England by Mr. Hodgson.

The Indian Larks follow next, which are as follow:—

Pyrrhulauda, A. Smith. Of this African form, there is one common Indian species:—

P. grisea; *Alauda grisea*, Scopoli; *A. gingica*, Lath.; *Fringilla crucigera*, Temminck. India generally.

Mirafra, Horsfield: the Agguncs. The species of this genus vary considerably in the degree of thickness of the bill, and also in the length of the wings and relative proportion of the primaries; but the first quill is always short, though varying a good deal in development, and the second rarely equals the third. Those with shorter and more rounded wings are also of a thicker form and less active in their habits; while the others present a nearer approximation to the true Larks.

1. *M. assamica*, McClelland and Horsfield, *P. Z. S.* 1839, p. 162, described in *J. A. S.* XI, 199. Remarkable for its thick bill, and obese, squat figure. Wings moderately long, with the first primary an inch in length, or nearly so, the second a quarter of an inch shorter than the third, and the third, fourth, and fifth, equal and longest. Common in Bengal, Assam, and Nepal.

2. *M. erythroptera*, Jerdon, *MS.*; “*M. javanica?*,” Jerdon’s Catalogue, *Madr. Journ.* XI, 33, and probably of Franklin’s catalogue. This species a good deal approximates the *M. javanica*, Horsf., *Lin. Tr.*

XIII, 159, judging from the more full description of Dr. Horsfield's specimens by Stephens, in Shaw's 'Zoology': but the Javanese bird is stated to have "the greater portion of the outer tail-feather white, and the following is of that colour on its outer web only; whereas in the Indian bird the white is confined to the exterior web of the outermost feather. Length about five inches and a half, of wing three inches and one-eighth, and tail two and one-eighth; bill to forehead somewhat exceeding half an inch, and tarse three-quarters: the outermost primary seven-eighths of an inch long, and second an eighth shorter than the third, fourth, and fifth, which are equal. Upper-parts streaky, the centres of the feathers dusky-brown, and their edges light fulvous-brown; coronal feathers lengthened, as in the Larks generally: beneath pale fulvescent, the throat white, and the breast marked with large oval blackish spots: primaries and secondaries ferruginous on both webs of each feather, except towards the tip, this dusky portion increasing to the outermost: tail blackish, its four middle feathers brown, and the outermost only white on its external web: bill and feet pale, the beak tolerably thick. Inhabits the more northern portion of the peninsula of India, being represented by the next species southward.

3. *M. affinis*, Jerdon, MS. Very similar to the last species, but having much less ferruginous colour on the wings, this being confined to the outer webs of the primaries, and a deep internal margin to the basal half only of their inner webs, never extending across the feather as in *M. erythroptera*, but continued throughout the length of the inner margin of the secondaries: the wing also is somewhat differently formed, being rounder, with the short first primary longer and broader, exceeding an inch in length, the second three-sixteenths to a quarter of an inch minus the third, which equals the next three in some specimens, whilst in others the fourth is somewhat the longest: and the tail-feathers are less black, with the external web of the outermost, and a slight exterior margin to the next, fulvescent-white, occasionally spreading more or less on the inner web of the outermost feather. Inhabits the southern part of the peninsula of India.

4. *M. Hayi*, Jerdon, MS. Also very like the two preceding species, but readily distinguished by its coronal feathers forming a pointed crest, and by the total absence of rufous on the outside of the wings, while on the inner surface this is pale and diminished in quantity: the under-

parts also are nearly uniform pale rufescent, but little whiter on the throat, and with but few and small dark spots on the breast; and the sides of the occiput above the ear-coverts, with the nape and sides of the neck, are pretty much of the same colour as the parts below. The wings, too, of this species are remarkable for having the first primary but half an inch long, while the second equals or even somewhat exceeds the three next: and the tail has its outermost feather wholly to near the base, and also the greater part of the next, rufous-white. Discovered on the eastern coast of the peninsula by Lord Arthur Hay, a zealous and successful cultivator of Ornithology, to whose honour the species has been dedicated.

5. *M. cantillans*, Jerdon, MS.; the true *Aggun* of the natives of India. Most allied to the last species, and having nearly the same form of wing, but at once distinguished by the absence of any marked crest, and by having the outer web only of the penultimate tail-feather white, together with the whole of the outermost excepting an oblique basal third of its inner web. Length five inches and three-quarters, by ten inches in alar expanse; wing two inches and seven-eighths (or two and five-eighths in the female); tail two inches: first primary three-quarters of an inch, the four next generally about equal, but the second and fifth sometimes a trifle shorter. Upper-parts dusky brown, the feathers laterally margined and slightly edged at tip with rufescent-brown, imparting a little the appearance of the nestling plumage characteristic of the Lark tribe: alars and their coverts margined with rufous-brown: a pale streak over the eye; throat and below the ear-coverts whitish; and the under-parts pale rufescent with small breast-spots, in general not very distinct. Bill dusky horn-colour, the lower mandible pale; and feet fleshy-brown. Inhabits Bengal as well as the Indian peninsula, and is a favorite cage bird with the natives for its sweet and plaintive, but not much varied, song.

6. *M. phanicura*, Franklin, P. Z. S. 1831, p. 119. Remarkable for the length and straightness of its wings, of which the first primary measures an inch, and the second is a quarter of an inch shorter than the third and fourth. Inhabits the peninsula of India.

Coryphidea, Nobis, n. g. In this form, the wings are long and straight, with the first three primaries equal (the representative of the usual small first one being obsolete). Bill rather short, subconical and moderately

compressed, but essentially Lark-like. Feet with shortish toes, and short but straight hind claw. The general contour much recalls to mind that of the northern Snowflecks (*Plectrophanes*).

C. baghaira; *Emberiza Bag-haira*, Franklin; *Baggeyra Lark*, Lath. *Alauda dukhunensis*, Sykes, *P. Z. S.* 1832, p. 93; described as *Corypha baghaira*, *J. A. S.* XI, 200: *Ortolan* of Europeans in India.

Alauda, Lin. Typical Larks.

1. *A. arvensis*, Lin. Nepal. Specimens of this bird sent as a new species by Mr. Hodgson differ in no respect from others killed in England.

2. *A. gulgula*, Franklin, *P. Z. S.* 1831, p. 119; described in *J. A. S.* XI, 201.—Var. (?), *A. gracilis*, Nobis, *J. A. S.* XI. 201; *A. gulgula*, apud Sykes and Jerdon.—Var. (?), *A. leiopus*, Hodgson, *MS.* A puzzling species, either subject to some degree of local variation, or, in Mr. Jerdon's opinion, separable into at least three most closely allied species as above indicated. Comparison, however, of numerous specimens from various parts renders the definition of these species or varieties extremely difficult, if not impossible. Those from southern India have the colours more intense, and for the most part agree with the Bengal specimen which I ventured to separate by the name *A. gracilis*, even according very commonly in the trivial distinction which I pointed out, of having the penultimate tail-feather somewhat largely tipped with the rufescent-white continued along its outer web, and this trifling character I have sought for in vain among heaps of the ordinary Bengal Lark killed for the table. Again, Mr. Hodgson marked a Nepalese specimen of the common Bengal variety as being probably distinct in species from his *A. leiopus*, and one of his specimens of *leiopus* resembles most minutely the common peninsular variety (or *A. gracilis*), while in general the Nepalese specimens seem to be rather short in the bill, and to have the outer tail-feathers of a purer and brighter white than in the others: but I confess my inability to draw up any marked and constant distinguishing characters. Specimens exactly resembling the common Bengal bird were procured by Sir A. Burnes in Scinde; and one from Arracan is remarkable for being rather small, and for having the exterior web of the penultimate tail-feather merely narrowly edged with rufous-white, instead of this occupying the whole outer web of the feather in question. I should remark that the Nepal specimens are also, in general, a good

deal less rufescent underneath than those from southern India, while the Bengal ones are in this respect intermediate. The common Bengal Lark very closely resembles the preceding species, or British Sky Lark, in its song and habits.

3. *A. malabarica*, Scopoli and Gmelin; *A. deva*, Sykes, *P. Z. S.* 1832, p. 92; Jerdon, in 'Madras Journal,' XI, 31. So closely allied to the preceding as to bear out the supposition of the distinctness of the different races of the latter which I have brought together; but at once distinguishable by the pointed form of its crest. Indian peninsula.

4. *A. raytal*, Buch. Hamilton, *MS.* Length five inches and a quarter, by eight and a half across; of wing three inches and three-eighths; tail two and one-eighth: bill to gape five-eighths; tarse three-quarters, and hind-toe and claw half an inch. General hue of the upper-parts brownish-ashy, with narrow dark centres to the feathers; of the lower white, faintly tinged with yellowish on the breast, where obscurely marked with small spots; wing-coverts and tertaries margined with pale fulvescent; outermost tail-feather white, except the inner half of the internal web throughout its length, and the next tail-feather white along the marginal half of its outer web only; there is also a whitish line through the eyes: bill pale horny; and legs yellowish, the hind-claw not exceeding the toe in length. I obtained a fine specimen of this bird alive, and kept it for some time, when just as it had come into good plumage it died, and, as a specimen, was destroyed by the ants. Buchanan Hamilton received a pair from Lucknow; and an example of apparently the same species was procured by Sir A. Burnes in the west.

Certhilauda, Swainson. Larks with slender incurved bill, and small first primary-quill to the wing. With the following exception, so far as known, natives of Africa.

C. chendoola; *Alauda chendoola*, Franklin, *P. Z. S.* 1831, p. 119, (nec apud Jerdon). Bengal, Nepal, Northern India generally, extending westward to Scinde.*

* The following description was taken from a pale specimen of a large, thick-billed, subcrested Lark from Afghanistan. Length seven inches, or more; of wing four inches; and tail two and a quarter; bill to forehead three-quarters of an inch, thickish and compressed; tarse an inch or nearly so. Head crested as in *A. arborea*. Colour of variety pale sandy fulvescent-brown above, the centres of dorsal feathers darker, those of crown but slightly so: under-parts whitish, fulvescent on breast, with much

I have reason to believe that the series of *Alaudinae* here given is yet incomplete; but that very few species, on the whole, remain to be added to the present synopsis of Indian *Fringillidae*, notwithstanding that many more are currently ascribed to India in the old systematic works. With the assistance of the accompanying plate, little difficulty will be found in recognising the various divisions of these birds, which I have seen reason to adopt, if the descriptions themselves do not suffice for the purpose; and I may hope and expect that this endeavour at reducing the group to something like order, will lead to further examinations, more especially in the Himalaya and to the westward, in which latter direction we have at present by far the most to learn of the Zoölogy of India.

Of the birds noticed in this paper, the following species are all that are absolutely wanting to the Society's Museum:—*Passer pyrrhopterus*, *P. (?) concolor*, *Pyrrhuloides epaulatta*, *Carduelis caniceps* and *C. Burtoni*, *Emberiza flavicollis*, *E. sordida*, and *E. Buchanani*, and the male of *Pyrrhospiza punicea*, and female *Passer pyrrhonotus*: but better specimens are desirable of many more, as especially *Proparus chrysotis*, *Parus (or Sylviparus) modestus*, *P. dichrous*, *P. amodius*, *P. melanolophos*, *P. iouschistos*, and *P. erythrocephalus*, *Passer pyrrhonotus*, *Amadina acuticauda*, *Estrelda formosa*, *Pyrrhula nipalensis* and *P. erythrocephalus*, *Chrysomitris spinoides*, *Emberiza Lathami*, *E. icterica*, and *Alauda raytal*; and, in general, specimens of the Himalayan *Fringillidae* are very acceptable, for transmission to the Honorable Company's and different European national Museums.

blackish on the sides of the fore-neck meeting across: tail, excepting its middle feathers, having a subterminal dusky band, and tipped with pale fulvescent: also a pale superciliary streak to sides of occiput; and the beak and legs pale.

Memoir on Indian Earthquakes. By Lieutenant R. Baird Smith, Bengal Engineers.

Part III. Analysis of the Phenomena of Indian Earthquakes, as exhibited in the two preceding parts of this Memoir.

All available facts connected with earthquakes in India and its frontier countries having now been given, it remains that the inferences authorised by these facts shall be duly exhibited. To this limited object I propose confining myself, it forming no part of my design to offer any general views of the theory of Earthquake shocks, but simply to illustrate their nature and causes so far as the materials collected in this country admit. The combination of these materials with others gleaned from different earthquake tracts, will doubtless lead to interesting general results, but such a work must be left to some one who commands better opportunities and greater leisure than I at present have.

The facts already given naturally subdivide themselves into two main classes; first, those illustrating the various phenomena; and second, those indicating the causes of earthquake shocks. To the former, attention will in the first instance be directed.

1. Characteristics of the Shock in Earthquakes.

The sensations experienced during earthquakes, as described by observers, are of three kinds.

a. A sensation of undulatory movements illustrated by comparison with the motion of a ship at sea, the wavelike progress of a snake in water, or the rocking of a cradle.

By far the larger portion of shocks in India give origin to sensations of this character. It would be tedious, and it is unnecessary to detail a large number of examples, but reference may be made to the great shock of the 19th February, 1842, as peculiarly illustrative of the point under notice. At Jellalabad it is said, "the earth swung to and fro like the rocking of a cradle," and at Peshawar, "the earth rocked like an infant's cradle, or like a ship at sea."

b. A sensation of sharp, severe concussion, as though the observer were struck heavily from beneath or behind; as examples of this se-

cond class, the shocks of the 9th February 1841, and 5th March 1842, may be referred to. In the former case the shock is described as having been "sharp and stunning, as if a blow had been struck under you;" and in the latter, the observer felt as though he had received a severe blow from behind, and been impelled forward.

c. A sensation of tremulousness, without any defined motion or concussion. This feeling ordinarily follows great shocks, when the crust of the earth seems to be gradually subsiding from intense disturbance to its former state of quiescence. The inhabitants of the valley of Cabool, distinguish this merely tremulous shock by a peculiar term calling it, "Zill-Zillie," in contradistinction to "Goozur," which appears to be the word used for the first class (*a*) ; numerous instances of class (*c*), occur in the register, among which may be mentioned the central Himalayan shocks of the 18th August and 23d September 1832, the lateral Himalayan shocks which followed the great earthquakes of August 1833, and February 1842, and the shocks in the delta of the Indus from the 18th to the 26th June, 1819.

d. The next characteristic of the shocks to be noticed, is the method, of propagation. There is evidence of two varieties of this, (1,) when the shock traverses a zone of the earth's surface, the breadth of which is very small as compared with the length ; (2), when the shock is propagated on all sides equally as from a central point ; the difference between the two varieties arises in all probability from difference of physical structure in the localities affected by the shock. The cases illustrating the first, as for example, the shocks of February 1842, or August 1833, occurred in the vicinity of great mountain ranges where faults and disturbances of the strata are numerous. The shocks were propagated in directions parallel to the mountains, and the breadth of the tracts affected by them was but small. The most marked case of circular propagation occurred in the alluvial plains of the delta of the Ganges on the 11th of November, 1842, and there, from the greater continuity of the strata, less obstruction would occur to the dissemination of the shock in all directions from the central point.

That shocks, whether they affect zones or spaces which, though not strictly circular, may yet for the sake of avoiding periphrasis be called circles, are propagated from central points or lines of maximum intensity is a fact so clearly established that it is scarcely necessary to advert to

it. The diminution of intensity with increase of distance from a central point is a phenomenon to be observed in all the principal earthquakes recorded in these pages, and although our observations are yet too imperfect to admit of our ascertaining precisely the place of maximum intensity, it is indicated generally in a sufficiently distinct manner.

Thus the valley of Jellalabad was the seat of the maximum intensity of the earthquake of 19th February, 1842, Lady Sale mentioning that its course from east to west was distinctly indicated by clouds of dust. The valley of Nepaul was also evidently the place of maximum intensity of the shock of 26th August 1833. Doctor Campbell observing that, "the valley of Nepaul though not geographically the central point, is most assuredly the portion that has suffered the greatest violence of the calamity." To the east and west of the valleys just mentioned the force of the shock probably decreased.

e. Had the materials collected admitted of it, I would willingly have given some examples of the velocity of propagations of earthquake shocks in this country, but unfortunately notices of time are so very imperfect and contradictory, that no inference worthy of confidence can be drawn from even the best of them. I must therefore content myself with a mere allusion to the velocity as a characteristic of the shock still requiring elucidation.

I now pass on to the next series of phenomena, viz. (2), motion of the ground during shocks.

The motion of the ground during shocks is of three different kinds.

a. A horizontal or forward motion, illustrated by the shock of the 5th March, 1842, during which an observer in Saharunpore felt himself, and the chair on which he was seated, impelled forward as if by a force applied from behind him. Another example is given by the shock of 3d April, 1810, (Part II. p. 47), in which it is stated, "the girandoles and lamps were seen to swing, and even the mirrors, (such as were fastened at the upper extremity with a cord), were seen to vibrate towards the wall". It may be inferred from this statement that the room in which these articles were suspended was moved bodily forward, while they by their inertia were left behind, and apparently moved towards the wall. In the account of the same shock a further illustration of the forward movement is given in the case of a person in the Lower Orphan School at Howrah, whose couch was

moved forward nearly a foot from its original position, and subsequently thrown back again; these instances will serve to explain the first kind of motion.

The second is :

b. A vertical, or as many observers style it, an "up and down motion", with no lateral movement. This variety was well marked during the minor shocks that followed the great earthquake of the 26th August, 1833. Dr. Campbell remarks, "many of them have been severe, and throughout the whole course of these visitations, there have been two distinct varieties observed in the character of the shocks; all those at the commencement were of the undulatory or swinging kind, the others wanted the swell, and were a violent up and down shaking, with little lateral motion." The shocks of the 4th October and 29th November, 1833, which were severe, were of the vertical kind.

c. The third kind of motion observed is a combination of the two preceding, giving rise to an undulatory movement or swell like that of the sea. This is by far the most common species of motion accompanying earthquake shocks, and is sometimes exhibited on a very large scale, as during the Jellalabad earthquake of 1842, the Nepaul earthquake of 1833, the Scinde earthquake of 1819. The surface of water in ponds and rivers frequently exhibited the undulation, as during the Calcutta earthquakes of the 11th November, 1842, and the great shock of the 2nd April, 1762, when the water in tanks in Calcutta rose upwards of 6 feet, and formed large waves.

In some instances the shocks commence with the vertical and terminate in the horizontal motion; this remark is illustrated by the phenomena of the shock of the 11th November, 1842, as described in Part I. p. 30. Two or three slight vertical shakes or heaves of the earth occurred, followed by a strong horizontal movement; this peculiarity seems to have been observed in Calcutta only; at other places the movement is described as of the purely undulatory character.

The undulatory motion has been remarked as invariably the most destructive kind of shock. Thus Dr. Campbell remarks of the Nepaul shocks in 1833, that the swinging motion was alone destructive to property, while the vertical, from the greater noise and more rapid succession, was the more terrifying. This difference of the two kinds of motion is easily explicable; the vertical shock merely raises the

building up without altering its centre of gravity ; while the waving motion throws it completely out of equilibrium and insures its fall ; the horizontal motion is occasionally destructive, but not so much so by any means as the undulatory.

3. Miscellaneous effects on the Earth's crust.

A certain degree and kind of motion of the ground accompany all earthquake shocks, but there are other effects on the earth's crust which are only occasionally observed ; these may now be noticed.

a. Alterations of level. The most remarkable cases of permanent alteration of level caused by earthquakes recorded in this memoir, are the Arracan and Chittagong earthquakes of 1762, and the Scinde earthquake of 1819. In the former case there is evidence of an upheavement of a large extent of the eastern coast of the Bay of Bengal, while in the latter the Ullah Bund, was suddenly raised and most striking changes occurred in the level of the eastern branch of the Indus. Subsidences of extensive tracts of country accompanied these upheavements : referring to Part II. page 48 and 50, examples of this kind of action will be found in abundance, and in the account of the Scinde earthquake, the formation of a salt water lagoon or marsh of nearly 2,000 square miles in area is noticed. At one part of the eastern branch of the Indus, a depression of level to the extent of 17 feet is recorded, while in other parts it varied from 4 to 10 feet.

b. Rents in the ground with ejection of water and gases.

A remarkable example of rents in the ground accompanied by the ejection of fetid water occurs in the account of the Cashmere earthquake of June 1828. Mr. Vigue remarks, "the earth opened in several places about the city, and fetid water, rather warm, rose rapidly from the clefts and then subsided.

Another remarkable instance of a great rent occurs in the Calcutta earthquake of 1737, when the English church is said to have sunk bodily into the ground.

In the Matura earthquake of 1803, extensive fissures were observed in the fields, through which water rose with great violence, and continued flowing from the 1st to 24th of September.

During the Chittagong earthquake of 1762, many great fissures in the earth occurred, from which water in large quantities rushed with

"prodigious" violence; these waters were strongly impregnated with sulphureous gas.

c. Landslips. These are confined to mountainous regions, and in the central Himalayan tract have been exhibited on a large scale. The effect of the earthquake of 1803, as described by Colonel Hodgson, in producing such slips of enormous masses of rock were of the most destructive character. "Whole villages" he remarks, "having been buried by the fall of cliffs and sliding down of the faces of hills." Another instance is recorded on the authority of Dr. Falconer, as having occurred in the same region in 1809, when the Bishnoo Gunga, one of the great branches of the Ganges, was blocked up by a landslip, and the water raised to 40 feet above its usual level. Colonel Hodgson notices the slip of a whole face of a mountain 4,000 feet high, during the earthquake of the 28th May 1817. During the Cashmere earthquake of 1828, large rocks and stones were seen to roll down from the mountains, and by the Nepaul shock of 1833, the Passes across the Himalayas from the valley towards Lassa, were completely blocked up by rocks and earth thrown down from the mountains. By the Chittagong earthquake of 1762, several hills are described as having been rent asunder, sinking down and stopping up the river near them; these examples sufficiently illustrate the extent to which landslips occur during earthquake shocks, and furnish striking indications of the great energy of the disturbing forces in operation.

d. Formation of sand cones. The only instance recorded in which these cones, so frequently observed during the Calabrian and South American earthquakes, were formed, is in the Scinde and Cutch earthquakes of 1819. "During the earthquake," it is remarked (Part II. p. 33,) "numerous jets of black muddy water were thrown out from fissures throughout this region (the Runn of Cutch,) and cones of sand, six and eight feet high were thrown up;" no facts are given whereby we can form any opinion as to the method in which these cones are formed, or of the causes to which they are due.*

e. Effects on springs. The Jellalabad earthquake of the 19th February, 1842, furnishes the only ascertained instance of a shock having produced any perceptible effects on springs. These effects

* We are informed that in the valley of the Irrawaddy no earthquake occurs without numerous ejections of *black sand*, stinking water, &c. &c. This locality is subject to very frequent shocks.—E.D.S.

are described in Part. I. of this Memoir; the water of the Sonah spring was deprived of its ordinarily high temperature, and the quantity of water discharged fell much below the usual average, and the flow occasionally ceased altogether.

I have no doubt that were observations to be more minutely made, many cases of this class would be discovered; they are not unusual in other earthquake tracts, and doubtless frequently occur in India.

4 *Sounds accompanying Shocks.*

a. *Subterranean sounds.* Although sounds as if in the interior of the earth are occasionally noted as accompanying shocks, they would appear to be rare. An example is found in the first shock of the Great Nepaul earthquake of 1833. During this shock there was a distinctly audible noise as of ordnance passing rapidly over a drawbridge, of which Dr. Campbell remarks; "I felt it was travelling with the speed of lightning towards the west, and just under my feet;" a second case occurred at Ram Sing Chok, north-east of the Nepaul valley, where it is said that for four or five days preceding the earthquake, "noises similar to the firing of cannon were heard as if under ground;" a third example is furnished by the Jellalabad earthquake of February 1842, of which Lieutenant Eyre remarks, "A loud subterraneous rumbling was heard as of a boiling sea of liquid lava, and wave after wave seemed to lift the ground on which we stood, causing every building to rock to and fro like a floating vessel." These are the only cases I have found in which sounds appeared to be in the earth.

b. Sounds in the air. These sounds are of two different kinds; 1st explosions, which vary in intensity from the sound of a cannon to a rumbling noise; the Cashmere earthquake of the 26th of June 1828, furnishes an example of the highest degree of intensity; "on that night," Mr. Vigne states, "only one shock took place, but just before sunrise there was another accompanied by a terrific and lengthened explosion louder than a cannon; on that day there were twenty such shocks each with a similar explosion;" similarly in describing the Nepaul shock of 1833, Dr. Campbell remarks, "in a dead calm the noise of a hundred cannon broke forth." The Jellalabad earthquake of 1842, was preceded by a "rumbling noise like a heavy wagon rolling over a wooden bridge." Under dates 25th July, 26th September, and 6th November

1842, other examples of the rumbling noise accompanying shocks will be found.

2d. A rushing sound. In describing the shock of 2d July 1832, (Part II.) Dr. McClelland remarks, "during twelve seconds the earth shook or rather trembled, and afforded a noise which it is difficult to describe, but which may be compared to the sound of a heavy but transient rush of water: the noise preceded and succeeded the motion about three seconds." Similar rushing sounds accompanied the shocks of the 23d September 1832, 30th May 1833, and 4th January 1835. The Calcutta shock of the 11th November 1842, is described as having been accompanied by "a noise which at first resembled a mighty rushing wind," and afterwards "the loud rattling of carriages over a stony street;" the shock of the 19th June 1819, as felt at Chunar, "was accompanied by a noise in the atmosphere resembling the rapid flight of birds."

These sounds always appear to be in the air, and although not invariable accompaniments of earthquake shocks, are rarely wanting. The movements of the crust of the earth must communicate similar movement to the air, and hence give rise to sounds; but it must be confessed that this cause is not sufficient to explain satisfactorily the loud and sudden explosions, and the peculiar rushing or whizzing sounds, that are so often observed; explanatory evidence is not yet collected to enable us to form a confident opinion, and although plausible speculative causes might be stated, I prefer waiting for further information, especially as among materials not yet arranged, there appear some facts which may illustrate this subject.

There is a notice of a sound observed during the Scinde earthquake of 1819, which although merely incidental and far from specific, yet merits remark. Under date the 25th June 1819, (Part II. p. 36,) an observer at Porebunder states, "the late phenomena have brought to my recollection, my having observed to an Officer of the Marines about the beginning of March last, that there was a cloud in the north east, which appeared uncommonly charged with electric matter; its direction was nearly opposite to the one from which I heard the sound that preceded the great shock of the 16th." It is perhaps rash to base any inference on an isolated fact like this, but it leads me to suspect

that the peculiar rushing or whizzing sound previously alluded to, is an indication of the discharge of electric matter, such a sound being familiar to those who have ever watched the phenomena of electric discharges in the laboratory.

5. Meteorological Phenomena accompanying shocks.

a. Barometric observations on the state of the Barometer during earthquakes in India, are few in number and not decisive in their results. In relating his account of the shock of the 23d January, 1832, Lieutenant Burnes notes, "the atmosphere had indicated nothing unusual before the earthquake, nor did the Barometer undergo any variation before or after it." During the Calcutta earthquake of the 11th November, 1842, an interesting Barometric phenomena was observed in St. Xavier's College, where the mercury rose and fell repeatedly to the extent of seven or eight tenths of an inch during the shock; "again, during the same shock, an observer on board the ship "Southampton" in describing a peculiar luminous appearance that accompanied the earthquake remarks, "the Barometer had slightly fallen previous to this, whether from the preceding rain or caused by the earthquake it is for others more capable to judge; I am inclined to think from the latter." It is difficult indeed to say whether the movement in this case was merely a result of the earth's movements, or of atmospheric disturbance, but from the quantity of rain that accompanied the shock, it is probable it was due to the latter. The following notices however throw considerable doubts on the Barometric movement in this case, and shew that it certainly was not general; Mr. Piddington remarks, "it did not occur to me to examine the Barometer, but I found no difference afterwards at home, and a friend who has an excellent Simpiesometer assured me that no effect was produced upon it, he having examined it immediately afterwards, so that in slight shocks the atmosphere seems to have no share."

Arranging the materials given in the general Tabular view of Indian earthquakes, (part II, p. 63,) so as to exhibit the relation of the number of shocks to the months of the year, we have the following general results:—

Number of shocks in January,	..	..	..	7
,, February,	..	..	..	7
,, March,	..	..	..	3
,, April,	..	..	..	15
,, May,	..	..	..	46
,, June,	..	..	..	14
,, July,	..	..	..	4
,, August,	..	..	..	15
,, September,	..	..	..	14
,, October,	..	..	..	8
,, November,	..	..	..	4
,, December,	..	..	..	5
Total,	..	..	..	<hr/>144

Dividing the year into two portions, from May to October, the summer and rainy seasons; and from November to April, the winter and spring seasons, we have the following distribution of shocks throughout the year.

During summer and rainy seasons, 93 Shocks.

 ,, cold ,, spring 42 ,"

Excess in summer and rainy

51

Had all the minor shocks been taken into account, the excess would have been very much greater, but the above is sufficient to shew that earthquakes are much more frequent in the months between May and October, than during the remainder of the year. Of these months, June, July, and August exhibit some of the severest shocks, as also the greatest number.

Now from May to October, the mean height of the Barometer is invariably less than from November to April inclusive. Prinsep's Meteorological Tables, (As. Soc. Journal, vol. I. p. 29,) furnish materials for comparison on this point, for several places within the earthquake tracts adverted to in the preceding part of this Memoir. The following three are given as illustrations.

Calcutta.

Mean height of Barometer from May to October,	..	..	29.606
Ditto, ditto, November to April,	..	..	20.908
			— .. 302

Ava.

Mean height of Barometer from May to October,	..	..	29.461
Ditto, ditto, November to April,	..	..	29.684
			— .. 283

Saharunpore.

Mean height of Barometer from May to October,	..	..	28.573
Ditto, ditto, November to April,	..	..	28.959
			— .. 386

It therefore appears that during the six months of the year when the Barometer is lowest, the greatest number of earthquake shocks occur, and further, since during the months of June, July and August, the mean of the height of the Barometric column is lower than at any other period of the year, (taking averages of a number of years), there appears an interesting coincidence between the greatest intensity of the forces to which earthquakes are due, which are displayed during these months, and the minimum weight of the atmospheric column. I note this point as an interesting one, since it has been observed in other earthquake countries, and it appears to be one of those facts which will be found intimately connected with the theory of earthquakes.

There are other facts, to be noticed immediately, which further establish the connection between the depressed state of the Barometer and the occurrence of earthquake shocks, such as heavy rains, hurricanes and storms, a close and sultry state of the air, &c. These will be recorded in their proper order and are now merely alluded to as tending to establish the connection just stated.

b. Direct Thermometric observations on the Thermometer during our Indian earthquakes are as rare as those on the Barometer, but the uniform testimony of observers establishes the fact, that a high

temperature is an almost invariable accompaniment of such shocks. Parts I and II, present many examples; but a few of the principal only need be stated in illustration of the point under notice. During the great shock of June, 1819, it is stated that "the heat for the last two or three days has been excessive." Relative to the weather preceding the Jellalabad shock of the 19th February 1842, Captain Eyre remarks, "On the 6th we had a heavy fall of rain since which the weather has become exceedingly close, this morning (the 19th), it was observed that an unusual degree of heat and stillness pervaded the air." An interesting notice occurs regarding another Jellalabad shock under date the 21st July 1842, it is as follows: "a severe shock of an earthquake was experienced at Jellalabad on the 21st at a little past 9 p. m., a reduction of temperature followed it." The Calcutta earthquake of the 11th November 1842, was also preceded by very hot weather, as were those of the 21st and 23d May of the same year. A specific statement of the condition of the Thermometer at Calcutta during the great Chittagong earthquake of April 1762, is given by the Rev. Mr. Hirst who remarks, "the heights of the Thermometer on Farenheit's scale was then at Calcutta, 95.30," much higher than it had been observed to be during the whole month. The preceding will suffice to shew that great heat is a characteristic of the weather accompanying earthquakes in this country, the high temperature seems to precede the shock, a decrease to follow it.

It has formerly been remarked that the largest portion of shocks occur, during the months between May and October, or the hot and rainy seasons of our year. May, usually the hottest month of the year, shews the largest number of shocks, a number indeed as may be seen on referring to the table of distribution of shocks throughout the year, very much greater than any of the rest. The inference from particular cases of earthquakes is therefore confirmed by the result of the general examination of the whole number recorded.

c. Pluviometric. Heavy rain although certainly not an invariable, is a very frequent accompaniment of earthquakes in India; the rain in some instances follows, in others precedes the shocks. The Nepaul earthquake of August 1833, is an instance of the former, it being noted, "that torrents of rain fell in the valley, washing down the walls that had formerly only been shaken." Relative to the

earthquakes of the Jellalabad valley, as illustrations of the latter, Captain Eyre remarks; "These shocks have always appeared to me to be in some way connected with heavy rain beforehand." Similarly during the shock of the 11th November 1842, heavy rain fell during the shock, none having fallen for some time before. The shock having been felt about half past nine P. M. the rain commenced about 8 P. M. and continued till about 2 A. M. Captain Hannay records in his notice of the earthquake of the 14th January 1839, experienced in Assam that "some days of heavy rain in the valley, and snow in the mountains preceded it," also in his notice of the shock of the 3d June 1839, it is observed the weather was wet and disagreeable. It would therefore appear that heavy rain before, during and after shocks has frequently been observed; and this remark, founded on our local experience, is interesting, as being in perfect analogy with observations made on earthquakes in other parts of the world.

d. Winds and storms. There are several cases noted in the preceding parts in which a connection is indicated between earthquake shocks and atmospheric currents. The circumstances accompanying them are such as to render it difficult to suppose that the connection was merely an accidental one. Thus during the Calcutta shock of the 11th November 1842, it was observed, that "there was an unpleasant stillness in the air previous to this occurrence (the earthquake), but the wind rose strongly from the eastward almost immediately afterwards." Again in the notice of the Delhi earthquake of the 24th October 1842, it is remarked, "the wind was west, from which quarter it had been blowing steadily for some days, but just previous to the earthquake it was in strong gusts." The great Calcutta shock of October 1737, was accompanied by "a furious hurricane at the mouth of the Ganges which reached 60 leagues up the river," and the shock of April 1810, in the same locality, occurred contemporaneously with a heavy north-wester. The Chittagong earthquake of 1762, was in like manner accompanied by "fresh gales of wind at south-east" and lastly, the severe shock of the 19th October 1800, at Ongole, occurred while "the wind was blowing a hurricane, and rain so heavy was falling that the whole country exhibited an entire sheet of water." These cases may suffice to draw attention to the possible connection of earthquakes with variations of winds.

and the occurrence of storms. That the connection is not an invariable one, scarcely lessens the interest of the enquiry, as observations may yet be accumulated which will exhibit the causes of this variability, and throw light on the true nature of the dependence of the earth-quaking and atmospheric forces on each other. As a very interesting indication of this dependence, arrived at by a totally different course of enquiry from the present, I may quote the few following remarks from Mr. Piddington's Sixth memoir on the Law of Storms in India (*Journal Asiatic Society*, No. 127, p. 717.) "Before I conclude, I must allude, as a question of research only, to another remarkable feature in these tracks, and indeed all the storm tracks we have yet traced out, which is this: If we look at the chart, we shall see that almost the whole of the storms seem to come in groups from certain quarters, and these quarters are those in which active and half extinct volcanoes are situated.

"Considering our charts in this point of view, we shall observe that, to commence from the northward six tracks, Nos. XXIX to X appear to come from the north-eastward, or from the direction of the great volcanic centre of the Japanese archipelago. Between these we have two tracks, Nos. II and XIX, which may be supposed, if they originated at so great a distance, to have come from the active volcanoes at the north extremity of the Marianas, as may also Nos. XVIII and X.

"We have then two groups from Nos. VIII to XXVII, which all pass over, if they do not arise from active or half extinct volcanoes; the north extremity of Luzon having the volcano of Camiguin, and another yet active, while a chain of active or half extinct ones extends through the almost unknown centre of that Island.

"We have next a group of three storms, Nos. XVI to XXI, which appear to issue from the straits of Mindoro, the eastern extremity of which has the great volcano of Albay; and to the south of it, the half extinct or active ones of Samar, Leyte, and Mindanao. Lastly we have a group of three tracks which originate at or cross the Island of Palawan, which having itself active volcanoes, has also to the south eastward of it Mindanao, with Siao, and Sangir a chain of active volcanoes." Mr. Piddington after stating that his object is simply to draw attention to circumstances sufficiently remarkable to merit it, further remarks, "I have already alluded to the well known fact at Manila

that no hurricane occurs without some volcanic action more or less violent being observed, and as the whole of the chain of the Phillipines from Mindanao to the northern extreme is full of active or partially active centres, far more so even than Java, there seems good ground for supposing some connection, but whether the volcanoes are the cause, or are agitated by the effect of the atmospheric disturbance, we are as yet ignorant. In the Bay of Bengal, if the tracks of most of our storms be prolonged to the south-east they will all be seen to start from near the yet active volcanic centre of Barren Island, and some of the old ones which I have traced certainly do the same.

"Again; if we look at Mr. Redfield's chart of West Indian hurricanes, we shall find them also mostly beginning about the volcanic Leeward Islands. The neighbourhood of Bourbon and Mauritius, and the Timor sea, where hurricanes seem very prevalent, are all instances of this sort of relation whatever it may be, if it really exists."

The general question of the relation of volcanic to atmospheric disturbances is one well worthy of investigation, and it is to be hoped that observers favourably situated may not neglect opportunities of collecting such information as may throw light upon its true character. Circumstances are favourable for observations on this point in the earthquake tract of the eastern coast of the Bay of Bengal, including Chittagong, Arracan, &c. along the whole of the Malayan Archipelago and the coast of the Persian Gulf.

e. Mists and Fogs. The last indication of atmospheric disturbance during earthquakes I have to notice, is the not unfrequent occurrence of mists and fogs in connection with the shocks. Thus during the earthquake of the 21st May 1842, it is noted "that for some days before and after this, the sky had a white, thick, hazy appearance;" again during the Assam shock of the 4th March 1840, it was observed by Captain Hannay, that although "the sky was cloudless yet the atmosphere was hazy." The shock of the 24th October, 1832 near Delhi was in like manner accompanied by haziness in the air.

The general results under this head may now be summed up in a few words. The atmospheric phenomena which have been observed to accompany earthquakes in India, so generally as to suggest the existence of an intimate connection between the two classes of facts, are, a depressed state of the Barometer, unusually high tem-

perature, frequently very heavy rain, accompanied by storms and changes of wind with occasionally a misty and foggy state of the atmosphere.

6. *Electric Phenomena accompanying shocks.*

These have been observed but rarely in this country, a few instances however are recorded. During the earthquake of the 7th September 1842, at the moment of its occurrence, sensations precisely similar to those accompanying an electric shock, were experienced by an observer at Mussoorie in the Himalayas, as noted in detail in the register for 1842. During the shock of the 11th of November, of the same year, a peculiar brightness was observed on the waters of the Hoogly which was exactly contemporaneous with the shock, and on closing round the Southampton communicated to that vessel "a general and severe tremor as if a taut cable was grinding under the keel, or that a sudden squall had struck the ship." It was observed that this brightness could not possibly be the reflected light of the moon and the possibility suggests itself that it may have been a display of electric light. An interesting fact is noted among the Porebunder observations on the great Scinde earthquake of June 1819, under date the 24th of that month; after a severe shock accompanied by much rain, it is noted "Immediately after it observed a long narrow black cloud, running west and east, or quite the contrary way to what I am accustomed to see a line of such cloud extend: it appeared stationary for half an hour, during which time there were constant tremors in the earth." It is possible that these tremors may have been an effect of what has been called "the return stroke" or the passage of electric matter from the surcharged earth to the clouds, a not unusual phenomenon. During the month of April 1762, when the great Chittagong earthquake occurred, it is remarked by the Reverend Mr. Hirst, that "there was much thunder and lightning in this month." Similarly during the shock of the 29th October 1800, the incessant thunder and vivid lightning are specially remarked; it would therefore appear that severe shocks of earthquakes are frequently accompanied by electric phenomena, and although the facts may not be sufficiently determinate to enable us to say that such

phenomena are essentially connected with earthquakes they are yet enough to warrant our drawing attention to the subject and endeavouring to secure information more minute and specific.

We have not as yet any evidence from this country to indicate a connection between earthquake shocks and disturbances of the magnetism of the earth, although both in Europe and in South America such a connection has been very distinctly exhibited, so much so, as to lead some to propose the magnetic needle as the best indication of earthquaking forces. The magnetic observatory of Singapore situated in the midst of one of the greatest tracks of volcanic force in the world, is peculiarly favourably placed for observations on this point, and as several earthquakes have occurred since its establishment it may be hoped that some interesting information has been collected.

7. Volcanic Phenomena accompanying shocks.

A few instances occur in the preceding portions of this memoir in which earthquake shocks are intimately connected with the action of volcanoes. Thus regarding the Scinde earthquake of 1819, it is remarked "the first and greatest shock occurred at a few minutes before 7 p. m. on the 16th June, but shocks of inferior violence continued till the 20th, when the volcano called Denodur, situated 30 miles north west from Bhooj the Capital of Cutch, burst into action and the movements of the earth immediately stopped." Again during the great shock of April 1762, it is observed by Mr. Edward Gulston "as we are informed that two volcanoes opened, I am in great hopes these will prove a sufficient vent to discharge all the remaining sulphureous matter in the bowels of these countries and put a stop to any further earthquakes here, at least for many years to come." During the principal shock of the Nepaul earthquake of 1833, vapour and flame were seen to issue from Nayadong one of the largest of the mud volcanoes of the Arracan coast. Whether these resulted from the mechanical effect of the concussion in opening some new fissure in the volcano or from an actual subterranean connection between the disturbing forces of the lateral Himalayan and Arracan tracts, there is no evidence to determine; the cases just noted occurred in volcanoes situated very near to, or actually upon the sea shore, a point which in the theory of the subject is worthy of

note, although, in accordance with the plan laid down for this analysis, I do not dwell upon it here.*

8. Physiological Phenomena accompanying Earthquake shocks.

Without inferring any actual connection between earthquakes and the diseases which are not unfrequently found to accompany them, the coincidence between the two is sufficiently remarkable to merit a brief notice in this analysis. The first instance is recorded in the note from Mr. Wathen's memoir on Kokan, (Part 2, p. 3,) where it is mentioned that in 1832 and 1833, the province was visited by constant earthquakes and simultaneously devastated by cholera. Again in 1828, during the severe earthquakes of that year in Cashmire, the cholera made its appearance with very fatal consequence to the inhabitants of the valley. The following extract from the Agra Ukbar of the 19th November 1836, gives another interesting instance of the coincidence now under remark ; "Sumbhul (Rohilcund) a series of earthquake shocks has been for some time and is still felt at this place, the shocks are of almost daily occurrence and are accompanied with a heavy rumbling noise which traverses the entire place ; the duration of each averages two minutes ; co-existent with the phenomenon is a fever of a more virulent nature than for years has visited the town."

The unpleasant personal sensations experienced during shocks are repeatedly alluded to in the previous pages. Considerable details will be found in Part II ; indeed scarcely a shock is recorded in which these feelings of nausea, tendency to faint, pains in the limbs and general lassitude of the system are not adverted to ; they resemble strikingly the sensations experienced by many when the atmosphere is overcharged with electric matter, and may serve as another indication that, during shocks excess of electricity actually exists. When it is borne in mind that during earthquakes, large quantities of sulphureted hydrogen and other deleterious gases are evolved, and that to the presence of the former of these, high authorities have attributed the fatal fevers of Africa, there is nothing irrational in supposing that continuous earthquakes may induce diseases of severe types. Without

* In the account of the blowing up of the mountain of Gammacanore in the Moluccas in 1673, it is said that "there was first a great earthquake which overturned the surrounding villages and several thousands of persons were buried under heaps of stones. When the mountain blew up the weather was calm and very fine."—Ebs.

attaching undue importance to the cases brought forward I may yet remark that the point is one well worthy of attention and investigation by better qualified parties.

9. Concluding Remarks.

Having now grouped as well as circumstances will allow, the various phenomena of Indian earthquakes, there remain only a few general remarks to conclude this part of the subject.

a. It will doubtless have been remarked that the localities subject to earthquake shocks, are characterised by certain features of general resemblance. In most, indications of volcanic action, of violent disturbing forces producing rents and fissures in the crust of the earth, of connection between the surface and interior of the earth, have been found. These features coincide with those of localities similarly affected in other parts of the world, and maintain that general analogy between earthquake tracts which has more than once been adverted to.

b. Of the earthquake tracts of India some are situated close to the ocean, others are removed from all connection, at least all external connection with it: this point is noticed because it has been thought by some that the presence of sea water is essential to the generation of the disturbing forces to which earthquakes are due. The central and lateral Himalayan tracts can scarcely have any connection with the ocean, removed as they are so far from it, and yet in these tracts, earthquakes of the utmost severity have been experienced.

c. The last peculiarity to be noted is the local nature of Indian earthquake tracts. Shocks occur in each of these with entire independence of the others, shewing that the forces operating in each are of local and limited extent. This circumstance is irreconcileable with the idea that earthquakes are due to the movement of a general fluid nucleus in the interior of the earth, it rather indicates that at various depths from the surface, reservoirs of materials, whether gases, fluids, or both, capable of generating disturbing forces exist, and that these reservoirs under ordinary circumstances act independently of all others.

To present at one view the contents of this part, the following tabular statement has been prepared.

*Synopsis of the Phenomena of Indian earthquakes.*1. *Characteristics of the shocks.*

- a. Undulatory shock.
- b. Shock by concussion.
- c. Tremulous shock.
- d. Method of propagation.
- e. Velocity of propagation.

2. *Nature of the movement of the Ground during shocks.*

- a. Horizontal or forward movement.
- b. Vertical or "up and down" movement.
- c. Composite or wave-like movement.

3. *Effect on the crust of the earth.*

- a. Alterations of level.
- b. Formation of fissures with ejection of water and gases.
- c. Landslips.
- d. Formation of sand cones.
- e. Effects on springs.

4. *Sounds accompanying shocks.*

- a. Subterranean sounds.
- b. Sounds in the air.

5. *Meteorological Phenomena.*

- a. Barometric.
- b. Thermometric.
- c. Pluviometric.
- d. Winds and storms.

6. *Electric phenomena.*7. *Volcanic phenomena.*8. *Physiological phenomena.*9. *Concluding remarks.*

- a. Geological resemblance of earthquake tracts.
- b. Relation of earthquake tracts to the ocean.
- c. Independent action of forces in Indian earthquake localities.

NOTE.—I may mention here that the large quantity of new materials connected with Indian earthquakes, which has come into my possession, since this paper was concluded will probably require the whole to be re-written so as to embody the new information obtained.

Notes, chiefly Geological, across the Peninsula from Masulipatam to Goa, comprising remarks on the origin of the Regur and Laterite; occurrence of Manganese veins in the latter, and on certain traces of aqueous denudation on the surface of Southern India. By Capt. NEWBOLD, F. R. S. Assistant Commissioner, Kurnool.*

Masulipatam stands on the sea coast in nearly 16° N. Lat.: and about 28 miles N. from the principal northerly embouchure of the Kistnah.

The adjacent country is the flattish maritime plain which according to Benza, extends between the mouths of the Godaverry and the Kistnah.

The alluvial sands that cover the surface rest on a bluish black tertiary, or post-pliocene clay, resembling regur, imbedding terrestrial marine shells of existing species, and apparently identical with the black clay beds underlying the Cities of Madras and Pondicherry and other places on the Coromandel Coast. In many places the overlying sand is aggregated into a loose sandstone of a nodular form, and often perforated with sinuous and straight cavities, the work of *pholades*. The structure of this sandstone, which contains fragments of recent shells, is here concretionary. The cementing matter is clay, and carbonate of lime with a little oxide of iron. The sand continues to cover the plain to the distance of 15 or 16 miles inland, partially underlaid by these beds of black clay, to within some miles of Bezwarah, when the gneiss is first seen to outcrop from these recent strata.

The plain of Masulipatam, it is quite clear, once formed the bottom of a lagoon, or marine lake, and was elevated and dried up probably in the post-pliocene period. The channel of the Kistnah, which it is likely supplied much of the fresh water, appears to have suffered a southerly deflection from the elevatory forces and consequent alteration of surface.

At Bezwarah the gneiss rises into a ridge, 600 feet high, running N. E. and S. W. its dip confused and contorted. Through a gorge in this ridge at right angles with its direction, runs the Kistnah. No evidence could be discovered of the Kistnah's having cut the channel through the ridge: it appears to have been originally formed, like the trans-

* *Regur*, the black, tenacious, but usually fertile soils of central and Southern India are known by this name.—Edd.

verse river courses through the chalk escarpments of the weald, by the elevatory forces that raised the strata to their present position. The features of the original fissure have doubtless been modified by the abrading power of the river; which, when swelled by the freshes entirely fills the gap, about a mile in width, its sides rising rather precipitously from the river's banks.

Beyond this ridge, which is of no great length, the surface of the country appears flat as before, and the rise from the coasts scarcely perceptible. With regard to the theory, of the tract between Bezwarah and Condapilly having once formed the bed of an extensive lake, my friend Mr. Malcolmson has justly observed, that, "a careful survey of the hills from the summit shows, that they are short insulated ranges, such as are found over the Circars and other tracts rising from a level country; and that had a lake existed in the plain above, every slight rise of the river would have carried its waters round their shoulders to the North and South."

The gneiss composing the ridge of Bezwarah is garnetiferous, Cleavelandite often replaces the common felspar, and renders the gneiss liable to decay. It contains large veins of quartz, and is intersected by greenstone dykes, the presence of which may serve to account for the distortion observable in its strata.

A little to the N. E. of Bezwarah are the diamond mines of Mallavelly where the gneiss is in some places covered by a conglomerate sandstone, resembling the diamond conglomerate of Banganpilly and Kurnool, and of which it appears here as an outlying patch. The diamonds are however dug for in a bed of gravel composed chiefly of rolled pebbles of quartz, sandstone, chert, ferruginous jasper, conglomerate sandstone and kunkur, lying under a stratum of dark mould about a foot thick. Dr. Benza traced the conglomerate sandstone hence by Ellore and Rajahmundry to Samulcotah.

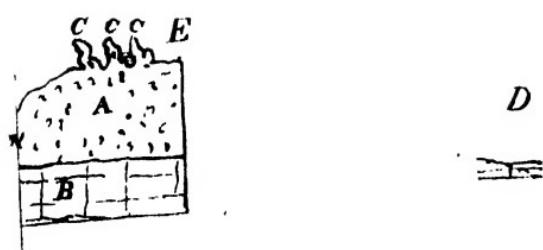
From Bezwarah by Condapilly to the vicinity of the Warapilly ghaut, the hypogene schists, chiefly gneiss and granite occur. East of Warapilly these rocks are covered by the Northern termination of the Cuddapah limestone beds. The diamond sandstone associated with this limestone, stretches still further North as already mentioned, by the diamond pit of Mallavelly to Samulcotah.

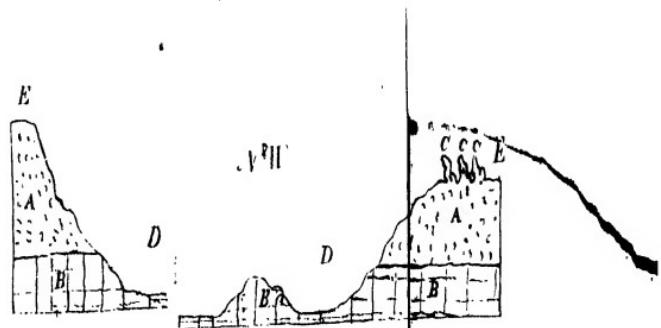
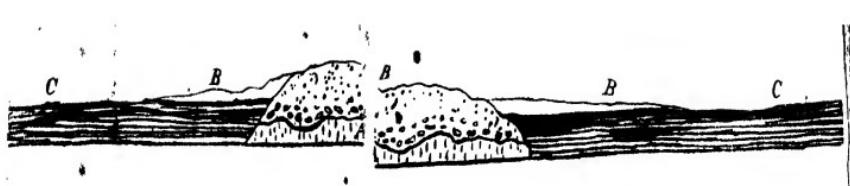
A little North of Warapilly, granite and the hypogene rocks con-

tinue to Hydrabad, and 48 miles to the N. W. of that city to the village of Moonopilly, on the Beder, where they are covered by the great overlying trap formation.

Most of the rocks about Hydrabad are of granite, that of Moeb Ally is of the laminar variety, often approximating to gneiss. The rock on which stands the celebrated fortress of Golconda, rises in the centre of the Valley of the Moossi, about 6 or 7 miles westerly from Hydrabad, and is composed of a granite with reddish felspar, translucent quartz, with dull dark green mica, and a few crystals of hornblende. Of this granite, which resembles that of Syene, the domes and outer walls of the Mausolea of the old Golconda kings are built. Through this royal cemetery runs a dyke of a dark crystalline greenstone, nearly E. and W., which is probably identical, from its direction, with a dyke observed 6 miles west of this, between the British residency and the great tank of Hussain Saugur. The rocks of the dyke bear evident marks of the chisel; and no doubt furnished material for the sepulchres of the Golconda kings, which are constructed of this, or an exactly similar greenstone exquisitely polished.

From Golconda the road towards Beder lies, for the few first miles, over the low granitic ridges which form the northern side of the Valley of the Moossi, to Lingumpilly, near which the ridge gently sinks into an undulating plain. Between this village, and that of Puttuncherroo, which is situate about 18 miles W. by N. from Hydrabad, the face of the country has a gentle N. W. declination towards the bed of the Mangera. Granitic rocks constitute its basis as far as Cummumpilly about 50 miles W. N. W. from Hydrabad. The granite is both of the small grained, red felspathic variety, and large grained. Both varieties are met with at Kundi, and Moonopilly 48 miles from Hydrabad. The small grained is seen to penetrate the other in sinuous veins. There is also a third variety, fine grained, containing much quartz and imbedded nests of a dark steel coloured mica. Veins of reddish felspar with actynolite, and a little quartz also are seen. Both granite and gneiss, and the veins by which they are intersected, are penetrated by dykes of basaltic greenstone; the largest dykes observed were east of Puttuncherroo; a little W. of Lingumpilly and Mootinghi:—also at Sedashipett, and Yernanpilly. The Mootinghi dyke runs nearly N. and S., the rest preserve an Easterly and Westerly

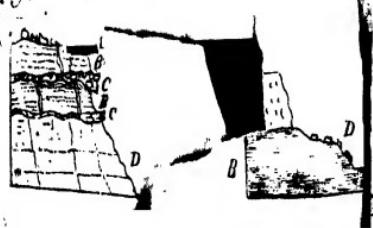




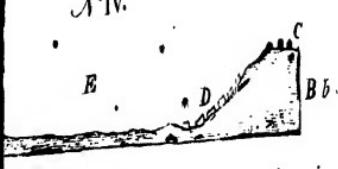
VIII.



IX.



X.



direction. The felspar of the granite and gneiss near the line of contact, is deprived of its lustre and translucency: and becomes opaque and white like porcelain: the mica either almost disappears, or shrinks and becomes hard, compact, and of a ferruginous aspect; while the rock *en masse* acquires a tendency to split into rhomboids. Near the line of contact with the overlying trap a reddish felspathic zone is observed similar to that described as occurring on the trap and granite boundaries at Gurdinny in the S. Mahratta country, S. of Bejapore, which passes into pegmatite soil. The soil from Hydrabad and Golconda to Puttuncherroo is generally the light reddish sandy detritus washed down from the granite heights in the vicinity, occasionally mingled with nodules of a ferruginous clay resembling the debris of laterite. A little to the N. and W. of Puttuncherroo, the granitic soil thins out and disappears, leaving exposed the sheet of *Regur* that underlies it, and which occurs first at intervals, but afterwards as an almost continuous sheet from Moonopilly to Beder.

Between Puttuncherroo and Moonopilly the strips of granite alluvium with which it is alternated appear to have resulted from the decay of *salbandes* and bosses of granite, which formerly outcropped from the bed of the *Regur*, but have since crumbled down by a process of weathering, which I have described elsewhere; and being washed by the rains, have covered the surrounding soil with a *sandy* detritus thus:—(See plate, Diagram No. 1)

A. undecomposed granite.

B. B. B. decomposed granite forming an alluvial surface soil.

C. C. *Regur*.

Near Sedashipett, a stratum of kunkur intervenes between the *Regur* and the granite. The surface of the *Regur*, where it overlies the trap from Moonopilly to Beder, is often intermixed with the detritus of the outcropping trap and laterite rocks associated. The soil resulting from the disintegration of the former is easily distinguishable from the *Regur* by its much lighter and reddish tinge, arising from the peroxidation of the protoxide of iron it contains. The *detritus* of the darkest portions of the trap, even before peroxidation takes place, have a greyish or greenish-brown hue, totally dissimilar to the *Regur*.

Boundary of the great overlying trap formation of the Deccan.—A little to the W. of Moonapilly, rounded and angular fragments of the

trap of the overlying formation, are seen lying on and partially imbedded in the *Regur*, with scattered, rugged, scabrous blocks of a compact cream and buff-coloured limestone passing into chert. The latter contained a cast of a small fresh water shell resembling a *Physa*.

Ascending the gentle slope, beyond the village of Cummumpilly, the overlying trap was first seen *in situ* in a section afforded by the steep bank of a nullah. The trap is petrographically identical with that of Bejapore. The structure is at once sheeted like that of modern lavas imperfectly columnar, and globular. The globular trap disintegrates by a process of concentric exfoliation. The concentric coats, weather into a brown speckled, friable wacke, which falling off and washed away by the rain leaves the hard spheroidal nuclei of basalt scattered on the surface; frequently in such numbers as to present the appearance of having been showered down by some volcano. These spheroids, vary in size from a pigeon's egg to a 16 inch shell.

Recent conglomerate.—A few miles to the S. of Sedashipett, a low flat topped range of hills is seen; which, from the calcedonies, jasper and fragments of trap brought down by the nullah, are probably of trap. These transported pebbles have been formed into a solid bed cemented together by lime, and form cliffs from three to ten feet in thickness on the nullah bank. Small rounded fragments of laterite are also included in this recent conglomerate, which is also seen in the beds of other rivulets between Moonapilly and Beder. These conglomerates rarely extend more than 20 or 30 yards from the present channels of the streams, and generally not above several feet. The lime contained in the water of the stream, and its tributary springs, has evidently assisted in the consolidation.

About four or five miles S.W. from Moonapilly, the low range of hills there seen was found to be of trap; the highest peak capped by a lateritic rock resembling that of Hor Muth S. of Bijopore described pp. 6 and 7 No. 2 Geological notes. This laterite near its junction with the trap passes into a bed of crimson-spotted, lithomargic earth resembling that of the Nilgherries, and is slightly impregnated with calcareous matter. The trap occupies the lowest situations, and constitutes the basis of the plain to Beder, where it is overlain by an extensive bed of laterite 200 feet thick.

Laterite bed of Beder.—The laterite bed of Beder commences about 16 miles ESE. from that city ; it is first seen resting on the trap in a bed about 100 feet thick, forming a hill, shaped like a truncated cone, about two miles SW. from the village of Sungum. Thence it continues capping the trap with little interruption, and forming the surface rock of the level and extensive tract of table land on which the city of Beder stands. The laterite bed terminates to the west about 12 miles WNW. from Beder, descending to the plain by a short, but steep declivity and at its basis the trap is again seen. It is about 28 miles in extent from ESE. to WNW. and about 22 miles, from WSW. to ENE. Its average thickness is about 100 feet, and maximum 200 feet ; it rises from the trap of the plain in abrupt, and sometimes precipitous acclivities. The cliffs supporting this table land of laterite on the northern and eastern sides, are from 100 to 200 feet high, but much lower and less abrupt on the W. side where the general level of the country appears to rise. The general direction of the cliff line, marking the termination of the bed near Beder, is E. by S. but the outline is irregular, the cliffs forming salient and re-entering angles.

The plain on the summit is almost one monotonous level, and less broken by nullahs than is generally the case on table lands. This appears in part owing to the rain water being mostly drained off through the porous structure of the rock before it has time to collect.

The height of this table land above the sea, as barometrically taken by Voysey, is 2359 feet, about 200 feet lower than the indications afforded me by means of the boiling point of water. Sheets of bare laterite impart a barren appearance to portions of its surface. The soil resulting from the disintegration of the laterite, is brown or reddish, gravelly or pulverulent, according to the varying petrographical structure of the parts of the rock of which it is composed. The soil formed from the dark and silicious varieties is usually sterile, but that from the softer and more argillaceous varieties is carefully cultivated, producing abundant *mungári*, or early crops. The yellow *juare* and *bajra* grown on it are said by natives to be sweeter than those produced by any other soils. It seems probable that among other causes of the sterility for which lateritic soils have been abused may be ranked that of the porous character of the laterite when it forms the substratum which carries

offt he water, particularly from the loose siliceous varieties of the soil, before it has had time to fertilize the surface. In the more clayey kinds of the soil the water is longer retained. In the immediate vicinity of Beder the soil does not lie thick, and the trees have a stunted appearance, particularly the mango trees that shade most of the Mausolea and Tombs in the precincts. Wherever there is a sufficient depth of soil and capability of retention of moisture, its chemical nature is certainly not against arboreous vegetation as the picturesque banyan tree, in front of the cavern spring in the *Farabagh* can testify. On the summit of the table land, a few narrow belts of the *regur* occur outcropping from the alluvium, Voysey counted four well defined zones of the cotton soil on this elevated insulation, between Beder and Shela-pilly, running N. and S. and lying between ridges of laterite, termed by him "Iron clay." The fact of its being thus found on the tops of hills, and covering the bottoms of valleys and plains, at a distance from any river's course, and out of the reach of present inundations, militates strongly against the theory of the *regur* being a fluviatile deposit as thought by some.

The principal wild shrubs growing in the lateritic soil on the surface are the *Pulas*, the *Kutlungi*, or *Chunqu Cheltu*; the *Cassia auriculata*, the *Anona squamosa*, *Asclepias gigantea*, the *Bair*, (*Zizphus Jujuba*) the *Acacia*, the *cara thorn*, and the small leafed *Burratiri*.

Petrographical character of the Beder Laterite.

The laterite of Beder, generally speaking, is a purplish or brick-red, porous rock, passing into liver brown perforated by numerous sinuous and tortuous tubular cavities either empty, filled, or partially filled with a greyish-white clay passing into an ochreous, reddish and yellowish brown dust; or with a lilac tinted lithomargic earth. The sides of the cavities are usually ferruginous and often of a deep brown or chocolate colour: though generally not more than a line or two in thickness, their laminar structure may frequently be distinguished by the naked eye. Before the blow-pipe it melts into a black clay attracted by the magnet, but is rarely so ferruginous as to entitle it to the character of an ore of iron; though some of the nodules are picked out, and smelted by the natives. The interior of the cavities has usually a smooth polished superficies, but sometimes mammillary, and

stalactiform on a minute scale. The hardest varieties of the rock are the darkest coloured, and most ferruginous. The surface masses of the softer kinds present a variegated appearance. The clay and lithomarge exhibit lively coloured patches of yellow, lilac, and white, intersected by a network of red, purple, or brown. The softness of this rock is such that it may be cut with a spade; hardening by exposure to the sun and air, like the laterite of Malabar. The surface of the harder or more ferruginous varieties is usually barren, flat like a pavement and often presents a glazed or semi-vitrified appearance. The debris of this rock washed from its surface by the rains is often seen accumulating in low situations, and reconsolidating into a nodular conglomerate; when the fragments of the laterite have been much rolled they assimilate externally to pisiform iron ore, but have neither its specific gravity, internal concentric structure, nor distinguishing lustre. The felspathic cement agglutinating these nodules is often of a deep brown colour, passing into various lighter shades according to the quantity of iron it contains, and is evidently composed of the more powdery parts of the parent rock: this alluvial laterite is seen in all lateritic areas in the S. of India and is as easily to be distinguished by its nodular and pisiform character, its position, and the thinness of its beds from the true laterite, as the reconsolidated debris of quartz, mica, and felspar is from the true granite rocks, at the bases of which it is often seen, in India, to accumulate in beds of some thickness and tenacity. In tracts where kunkur and limestone prevail, as near Bejapore and Bangwari, the lime often enters into the cement of this lateritic alluvial conglomerate.

Sections of the laterite presented by the cliffs and wells of Beder.

In the sections afforded by the faces of the cliffs and deep wells of Beder the laterite sometimes presents a homogeneous cellular structure from summit to base. Generally speaking however, it becomes softer and more sectile as it descends; and the cavities in the lower portions are better filled than those higher up. This may be attributed in some measure to the action of the rain, which falling on the surface percolates through the cavities of the upper portions of the rock carrying downwards much of the ochreous and lithomargic earths they contain until at length the cavities of the lower parts of the rock be-

come so full that they form an impervious bed where the water collects in hollows and cavities. Here it accumulates until it either trickles through the passes of the side of the cliff, or finds its way out by some of the nearly horizontal joints that intersect the rock. Such are the sources of the shallower wells and springs observed in the substance of laterite rocks. The deeper wells and springs are usually found at its basis where it rests upon the impervious trap. Near the line of junction the trap is almost invariably observed to be in a state of disintegration either as a friable wacke, or as a brownish or greenish grey clay. The laterite is no longer hard or porous; its cavities are broken up or filled with lithomarge and ochreous earth; and in short, it presents a dense bed of clay variegated with shades of purple, red, yellow, and white. This clayey state of disintegration of both rocks is ascribable chiefly to the collection here of the percolated water from above. The line of demarcation between the two rocks is not easy to distinguish as the clays are intermixed by the water; that of the trap is easily to be distinguished at a little distance from the contact by its greenish hue, and soapy feel, that of the laterite is often meagre to the touch, and either white, or tinged of various shades by iron. The disintegration of the trap rock rarely extends more than four or five feet below the junction.

The tubular cavities in the laterite have not unfrequently a horizontal direction; and, where numerous, impart a somewhat laminar structure to the rock. They are observed to be most numerous where the water, obstructed from passing lower down, is compelled to find its way to the sides of the cliffs; empty sinuous tubes having a general vertical direction are also observed varying from a few lines to one or two inches in diameter passing through the rock, one was traced 30 feet until it disappeared in a projecting portion of the cliff. These cavities are sometimes lined with drusy crystals of quartz. The surface of the interior is generally ferruginous and shining, and sometimes mamillary and stalactiform *veins of manganese in the laterite*. I am not aware that any writer on laterite has noticed the occurrence of veins of manganese associated with oxide of iron in this singular rock, a mineral which has probably afforded the beautiful lilac colour seen in its lithomargic earth.

At the western base of the cliffs; about 16 miles W. by N. from

Beder and $1\frac{1}{2}$ mile from the village of Hulfergah, on the left of the road leading down from the table land into the plain, the laterite is seen penetrated by a great number of veins, which at first sight, from their dark aspect and singular direction, might be taken for those of basalt. They are composed of black, often earthy manganese, combined with iron. The veins are extremely tortuous, and crossing each other in every direction, and give a reticulated appearance to the rock. On the sides of these veins the laterite is so hard as to stand out in relief from the weathered portions of the rock. The veins are usually thicker near the bottom of the cliff, fining off as they ascend until they are gradually lost in the substance of the laterite : others are horizontal. As they diminish from an inch to a line in thickness, they gradually lose the deep bluish black colour, becoming mixed with the matter of the matrix, and pass into a brown, yellowish brown, and lastly, a purplish thread which is lost in the substance of the rock.

The bluish black substance of the veins is compact and hard, in some parts ; sectile and earthy in others, easily frangible. Before the blow pipe, *per se*, it is converted into a black slag affected by the magnet ; with borax it fuses into a bead of amethyst coloured glass.

The indurated sides of the veins are of a mottled reddish grey colour, resembling indurated lithomarge : portions of the greyish-white clay in their vicinity acquire an almost vitreous hardness and a cellular friable aspect, a dull greenish enamel lines most of the cavities in the laterite : the lithomarge is slightly indurated. The friable parts of the rock exhibit traces of calcareous infiltration. The greyish white clay fuses into a greenish enamel similar to that lining the cavities. The pure lithomarge undergoes little alteration, before the blow pipe ; does not fuse but becomes indurated, darker and more mottled. The impure varieties exhibit in the reducing flame, minute greenish globules.

The lithomarge, and the greyish white, and coloured clays, all emit air bubbles, when placed in water, they also slightly decrepitate but do not fall to pieces ; with water they form a plastic clay. The purer varieties of lithomarge are little adhesive, feel meagre ; the streak and fracture is earthy : that of the white clays shining, feel slightly greasy to the touch.

It must not remain unnoticed that near at the base of the laterite cliff, in which the manganese veins just described occur, runs a dyke of compact and exceedingly tough basalt, occupying the space of a few

yards in breadth between the laterite and the trap of the plain. There I was unable to discover any veins of manganese either in the latter or the basalt.

The basalt of this dyke is seen, in the bank of an adjoining nullah, to assume both the globular and columnar structure.

Valley of denudation.—At the N. E. extremity of the cliffs of Beder an instructive example of a valley of denudation and excavation about a mile in breadth is afforded, of which the following is a Section. It shows at the same time the immediate superposition of the laterite on the overlying trap of the Deccan. (*Plate Diagram No. II.*)

A. A. Are cliffs of laterite from 120 feet to 90 feet high once evidently a continuous bed over B. B. sheeted trap and amygdaloid, and occupying C. C. The space D. D. hard ferruginous masses of laterite. Though evidently much waterworn and disrupted, they have successfully maintained their position against the transporting effects of the stream, which not only stripped off the laterite and denuded the subjacent trap, but excavated the latter to the depth of many feet having the hard mass *Ba.* in the centre, and the valley of denudation, and excavation D. D.

This valley runs E. by S. and over the plain at its eastern extremity are scattered the harder nodular fragments of the stripped laterite mingled with regur, and the recent lateritic alluvium of the adjacent cliffs.

Economical uses of the laterite of Beder.—The laterite, particularly its closer varieties, has been largely used in building the city walls; in the revetements of its ditches, wells &c. and in the construction of the more common cemeteries. The principal edifices, walls, and bastions of the fortress are of the trap. The laterite quarries of Beder resemble those on the coast of Malabar and Canara, but are deeper in consequence of the sectile beds, which are usually preferred, lying deeper below the surface than in Malabar, where the far greater moisture of the atmosphere may have some effect in preserving the moisture and sectility of the upper parts of the rock. Both rocks harden on exposure to the air. There is little appearance of stratification in the cliffs; and on the other hand, no tendency to a prismatic, columnar, or globular structure. The rock has much the appearance of those enormously thick bedded sandstones, where in cliffs even of 200 feet high there is no

alternation of other beds, and the rock appears one unstratiform trap often cleft by vertical fissures, into columns and pinnacles.

I have dwelt longer upon the subject of the Beder laterite, than it at first sight might appear to merit, but I may plead in extenuation that it is the first bed seen, beyond the granitic and hypogene area, resting on the overlying trap (a rock and the nature of the rock on which it rested had been differently stated by Malcolmson and Voysey, by the former as granite, the question however by this visit has been set at rest for ever), which probably belongs to the tertiary period. Calder to whom we are indebted for the only general view of Indian geology hitherto published, and whose ideas have been quoted by some eminent European geologists, terms laterite "a contemporaneous rock associating with trap, and commencing only where the overlying trap ends, a little to the N. of Baukote, or Fort Victoria, and thence covering the primitive rocks of the Ghauts and W. coast to Cape Comorin". Now the laterite of Beder, and many other localities, some of which will be described in the course of this paper, lies beyond the area of the rocks termed primitive by Mr. Calder, and rests *upon* the overlying trap; it has never been observed underlying or alternating with it, therefore the only proofs available, viz. that of superposition and non-alteration, tend to prove its more recent and non-contemporaneous origin; a point of great importance. The existence in it of veins of manganese and of large beds of the same mineral I afterwards discovered in the laterite area capping the granitic and hypogene rocks of the Kupputgode range in the S. Mahratta country are remarkable facts worthy of note, for until we find beds and veins of this mineral in the granitic and trappean rocks underlying the laterite we must be slow to admit the theory, advocated by several geologists, of the latter being nothing more than the result of the recent disintegration of the former rocks *in situ*. The beds of lignite discovered by General Cullen and myself in the laterite of Malabar and Travancore, and the deposits of petrified wood in the red hills of Pondicherry in a rock which though differing in structure, I consider as identical in age with the laterite, and other facts too long for enumeration here point rather to its detrital origin, like sandstones. I do not ever recollect having seen in the laterite resting on the overlying trap any fragments of the calcedonies or zeolites that often so greatly abound in the rock immediately below it, a fact which

while decisive against the decomposition *in situ* theory, would lead us to the inference that the laterite owed its origin to the detritus of other rocks than the overlying trap.

Laterite by many geologists in Europe is supposed only to fringe our coasts, and exist as a thin cap on the ghaut summits; every day however is adding to our knowledge of its extent in the interior of the peninsula, and it is evident not only that it must have covered it formerly to a much greater extent than at present; but that it has since been much broken up by the subsequent denudation of which on the small scale, Beder affords a specimen (*vide section.*) The effects of this denudation however, are visible on the grand scale in the interior of S. India, where the tops of mountains of granite, hypogene rocks, and sandstone many miles asunder are seen capped with laterite in almost horizontal beds, and little or no laterite in the intervening plains and valleys. As in Mac Culloch's description of the great denudation of the red sandstone on the N. W. coast of Ross-shire. It is impossible to compare these scattered and detached portions without imagining that the whole intervening country has once been covered with a great body of laterite, enormous masses of which have been removed by denudation. The same remarks might be applied with some modification to the subjacent sandstone. Some fragments of this great denudation may be recognized in the laterite gravel and clay which overspreads the surface of many parts of the country, and which when reconsolidated it is often difficult to distinguish from the true laterite, from which it has been derived and for which it has often been mistaken.

From Beder to Calliany, Trap and Laterite.

It is now time to resume our journey towards the old Jaiu city of Calliany, more lately the Metropolis of the* Kings, a provincial city under Aurungzebe and now under the Nizam.

From the foot of the cliffs of Beder, a plain, based on trap amygdaloid abounding with calcedonies, zeolites, and calc spar, broken only by a few slight undulations, extends to Calliany near which the surface undergoes a gentle but considerable ascent, a few belts of the reconsolidated laterite gravel just described cross the road resting on the trap, and are evidently derived from some high laterite cliffs to the W. and N. of the city to which I traced the debris. On one of these

* MSS. illegible.

heights stood a few denuded laterite cliffs about 20 or 30 feet high, insulated from each other by spaces 4 or 5 feet wide and resembling those already delineated in the Beder valley section. A piece of calcedony was picked up in the gravel but none could be discovered in the unfractured laterite. The trap, in the form of wacke, here underlies both the laterite and its detritus; the line of demarcation is perfectly defined and distinct.

Bazaar excavated in the Laterite cliffs of Calliany.

Nearer Calliany the bed of laterite gravel is succeeded by laterite, which forms a low ridge of hills immediately to the West of the town. A street has been cut from the rock, running along the side, about midway up the ascent, in the scarp of which a long row of now deserted houses and shops have been excavated, and also small caves supported by pillars of the laterite left untouched, while excavating. The bases of the cliffs in the vicinity are quarried for the softer variety of the laterite, which is carried off in baskets, ground with water into a plastic clay, and used as a water proof covering to the tops of the flat roofed houses of Calliany. The laterite is here called by the natives from its worm-eaten appearance *kire ku putthur*, or *silika putthur*. The Tamuls call it *chori kulloo*, *vettic* and *culloo* and on the Malabar coast it is termed *stika culloo*.

The wells here are of considerable depth. The temp. of one, 35 feet to the surface of the water was $78^{\circ} 5'$ —Temp. of air in shade, 89° ; the boiling point of water $206^{\circ} 5'$ —Temp. of air 84° .

The soil between Beder and Calliany is principally lateritic mixed with the detritus of the subjacent trap crossed in a few situations by zones of *regur*, often blended with the trap and laterite soils, the low flat-topped hills avoided by the route appear to be of laterite resting on the trap.

From Calliany to Gulburgah.

The laterite continues from Calliany to a few miles beyond Murbi, a distance of about 15 miles, forming long flat-topped ranges of hills rising about 100 feet above the general level of the table land, and running E. S. E. They are separated by narrow flattish valleys having a similar direction to that of the hills, and to that of the wider valley

separating the Beder and Calliany laterite cliffs : they present the usual appearances of vallies of denudation, and in many places the trap and amygdaloid underlying the laterite have been exposed.

At Murbi the laterite table land of Calliany is descended to a terrace or step of comparatively level land, where the trap and its associated wacke, amygdaloids and kunker, are the only rocks met with. A little N. of Gulburgah another terrace formed by these rocks, is descended to the still lower level on which the city stands in the valley of the Bhima, about 12 or 14 miles to the N. of the present channel of this fine river. About 10 miles S. of the city, beds of limestone outcrop from the trap between the villages of Nundipoor and Sinnoor, and continue forming the bed of the Bhima at Firozabad, dipping slightly towards the S. W. The limestone continues on the opposite or S. bank of the river about 4 miles, a little to the N. E. of the village of Gownully, where it is again overlaid by the trap. (*Plate Diagram No. III.*) is a rough section from the table land of Calliany to the S. bank of the Bhima, comprehending a tract of land about 50 miles N. and S. exhibiting extensive denudation ; both laterite and trap having been stripped off the subjacent limestone exposed in the valley of the Bhima. On the South side of the valley the trap re-appears, but the softer laterite has been entirely swept away.

- | | |
|----------------------|--|
| A. Laterite. | Rolled and waterworn fragments of the |
| B. Trap once forming | trap occur in, and on, the soil and gravel |
| C. Limestone. | overlying the limestone, at a distance of two
a continuous sheet. |
| | or three miles from the present channel of |
| | the river, and far above the reach of its |
| | highest floods. The traces have all the appearance of having been |
| | formed by the action of water. |

Iron smelting at Murbi.

It must not be omitted to mention that at Murbi, near the edge of the Calliany table land, and the adjacent village of Boghirry, the more ferruginous nodules occurring in the laterite are collected, roasted, coarsely pounded, and smelted. The furnace at Murbi is a small one, and capable of smelting about one *Kucha* maund of 12 seers per diem. The ore is subjected three times to the action of the fire ; twice to reduce it and cleanse it from dross by beating the half molten mass

with heavy hammers; and the third time to form it into bars, and other forms convenient for agricultural implements; which are sent to Gulbergah, and Calliany. These markets are also supplied with iron from Mogumpilly in the Koil Talook. The ore, which is in the form of nodules, often exhibits, on fractured surfaces, stripes of haematoxylic red earthy ore, alternating with others of a metallic iron blue. It is sold by the people who collect it to the iron contractor on the spot at the rate of 3½ Hydrabad rupees the Kucha maund of 12 seers.

Lithologic character of the Firozabad limestone and Traps.—The denuded limestone, in lithologic character, closely resembles that of Kuddapah, Kumool, Warapilly and Talicota, no fossils were found in it. The prevailing tint is a greyish blue, strings of small spherical cavities occur in it as in the limestones just alluded to, some empty, others filled with a brown ferruginous dust.

The trap has often a porphyritic structure, imbedding crystals of a dull olive green mineral, which in disintegration assume a greenish-brown tinge, and finally fall out, leaving cavities in the rock. They are not unlike some varieties of olivine, a mineral occasionally seen in this trap; a great development of kunker is observed in its fissures previous to coming on the outcropping of the limestone.

The Bhima River.—The Bhima is about 600 yards in apparent breadth at Firozabad, its temp. 78° Faht. temp. of air 90°. Approximate height of bed above sea by boiling point 1730 ft. The waters were swollen and muddy from the Monsoon rains (June) and running at the rate of 2½ feet per second. A tumblerful of the water deposited about $\frac{1}{16}$ * its bulk of a fine reddish brown sediment, which effervesced with dilute sulphuric acid, evidently the debris of the trap, amygdaloids and limestone rocks, over which it passes. The banks are shelving, and composed of the laminar greyish blue laminar limestone covered with silt and *regur*, and their surface strewed to a considerable distance on either side with rolled fragments of agates, calcedonies &c. marking the extent of the floods.

The bed has been hollowed in the limestone, exposing shelving surfaces of the rock, in some places perfectly bare, others covered with silt or a gravel from the size of a pea to that of an egg, fragments of trap, and limestone, calcedonies, jasper, and agates. In consequence of the

* So in MSS.

disorders committed by the irregular Arab soldiery, the town of Firozabad had been almost deserted : and the *ambikars* with their basket boats had quitted the ferry which was now unfordable and the water running with considerable rapidity. The village people collected a number of pumpkins, and about noon they succeeded in netting these together and constructing a tolerable raft, with which the stream was easily crossed.

The sources of this fine river rise in the western ghauts a little to the N. and S. of Poonah ; after watering the fertile plains of the country of the Marhattas, where its banks are famous for the breed of horses and mares from which the hardy cavalry of this warlike race has been chiefly supplied, and flowing S. Easterly towards the Bay of Bengal over the almost continuous sheet of the great overlying trap formation of the Deccan, it joins the Kistnah on the granite and hypogene area of Hydrabad about 50 miles direct distance S. E from Firozabad. It contributes to the Kistnah many of the *Pietri duri* of the overlying trap formation that are rolled along its bed over more than half the peninsula.

Trap Formation from the right bank of the Bhima to the laterite of Inglisswara.

The trap again covers the limestone a little to the N.E. of the village of Gonnully, about 4 miles from the river : the latter rock is seen outcropping for the last time at the base of a low hill of trap between Gowncolly and Sunnoo. The trap is amygdaloidal, veined with kunker, and imbedding calcedonies and calc spar.

From Sunnoo to Jyattaky the calcedony is seen both in veins and nodules, and passes into plasma ; the colour varies from the lightest tinge of apple green to the deep hue of heliotrope into which it passes ; in some translucent varieties the colouring matter is desposed in delicate moss-like filaments, the colouring matter of the plasma has not been exactly ascertained by chemists, but it seems to be similar to that of the heliotrope, both disappearing before the blow-pipe.* The colour of this variety of plasma when exposed to the reducing flame changes to a purplish white, the plasma becoming opaque and easily frangible. I have little doubt that the red spots of the variety of Calce-

* Perhaps silicate of Iron ? that of Heliotrope being the red oxide ?—Eos.

dony termed heliotrope are derived from thin beds of fine bright red
bole which are often seen alternating with the trap, and in nests, in this
vicinity.

The surface of the country to Sindaghi presents the long, low, flat,
step-like elevations of trap, separated by plains along which the route
lies, and running in a S.E. direction. The soil is usually the detritus
of the trap and laterite in belts and patches of a grey colour, and dark
red, sometimes sandy; the vegetation stunted consisting chiefly of the
Acacias the *Cassia Auriculata* and *Hingun* thorn. On a fallen blight-
ed acacia amid the low jungle I observed a chameleon perched motion-
less, with his head erect and jaws wide open, as if indeed making a meal
of the afternoon breeze. His skin, which mimics the prevailing hues
of surrounding objects; blue when basking beneath a cloudless sky,
and emerald when shaded by the forest's verdure, had here so strongly
assimilated that of the black and ashy white stem on which he lay, that
at first I thought it was a singular excrescence of the wood itself.

A little to the N. W. of Sindaghi the summit of a ridge is observed
covered with globular masses of a compact basaltic trap, underlain by
a bed of the fine red clay imbedding a profusion of Zeolites, also
heliotrope, plasma, geodes of calcedony lined with quartz, crystals,
semiopal, cacholong agate, and calc spar, resting on a greenish grey
wacke. Both rocks are veined and interstratified with Kunker of a
somewhat cancellar structure. The horizontal layers of Kunker are
often from 10 to 12 inches thick. The softer wacke and amygdaloid,
in weathering often leaves the harder layers of Kunker projecting from
the surface. (*Plate Diagram No. V.*)

A Globular basaltic trap. B Red amygdaloid. C kunker layer. B red
amygdaloid. C Kunker layer, D Wacke.

From Sindaghi by Ipperghi to Ingleswara, the aspect of the country
is much the same as from the Bhima to Sindaghi, but the plains become
flatter, more extensive, and more intersected by nullahs. At Ipperghi
the trap assumes the rich brownish purple or chocolate hue of the
trap of Bejapore, and is seen in the bed of the rivulet resting on a
beautiful red zeolitic amygdaloid: the line of contact is marked and
distinct: heliotrope and plasma are less common here.

Indications of the laterite are perceived before reaching Ingleswara
in beds of its detritus re-cemented by a brown ferruginous and calca-
reous paste, also fragments of chert and a variety of limestone por-

phyry. As anticipated, the laterite was found capping a ridge of trap and wacke a little to the S. W. of Ingleswara presenting a similar development of the lithomarge near the line of contact with the trap as observed at Beder. The latter rock passes into a friable greenish wacke, and also into a dark amygdaloid containing spheroidal cavities, often filled or lined with green earth.

The hill of Ingleswara, marked by an old tower, is principally composed of wacke penetrated by flattish, apparently compressed, veins of fibrous arragonite. On the top of the hill are scattered globular and angular fragments of basaltic trap; while partially imbedded in the soil covering its sides, are rough, scabrous-looking blocks of a light coloured rock, resembling altered limestone passing into chert. These blocks are mostly angular, from generally 6 inches to two feet thick, have a whitish exterior so rough in aspect and touch as, in these respects, to resemble trachyte, and when fractured the small glistening, red, and white calcareous crystals they imbed, might at first sight be taken for those of glassy felspar. The softer and more crystalline portions of this singular rock effervesce with acids. It occurs also, in detached blocks, on the wacke at the base of the laterite cliffs S. W. of Ingleswara. The rock here is more compact, homogeneous, less crystalline in structure and exhibits dark dendritic delineations. Some fragments are partly coated with a thin bluish white enamel, which is apt to assume a botryoidal form; on its surface are seen numerous small white globules of white enamel. Among the lateritic debris intermingled with these blocks are interspersed numerous nodules of a black cineritious looking mineral, containing cavities filled with an impure, earthy, brown manganese; their black outer crust is often so indurated as to give fire with steel. Before the blowpipe, *per se* it reddens slightly and exhibits minute globules of a bluish white enamel.

The following section will exhibit the position of these blocks of cherty limestone as they occur on the sides of a valley of denudation and excavation, a mile in width. (*Plate Diagram No. IV.*)

- A. Laterite, overlying trap at B. and stripped off at E and B. b.
- B. B. b. Trap.
- C. Globular basaltic trap.
- D. D. Blocks of whitish scabrous limestone passing into dust and half imbedded in lateritic gravel.
- E. Valley of denudation and excavation.

The Limestone has very much the appearance of the freshwater limestone of Nirmul, Moonapilly, and Kookonda between Gulberga and Muctul, and has evidently been broken up and altered by the basalt. The angularity of the fragments and their little waterworn appearance, prove that this bed must have been deposited, and existed *in situ*, at no great distance from the present locality. The blocks were not observed in the centre of the valley, from which it may be inferred that the limestone was only a littoral deposit, or that its fragments were carried away by the aqueous current by which the valley was excavated. The laterite cliffs of Ingleswara like those of Beder, Son-dur, and on the western coast, are cavernous: one of the caves near the summit, is held sacred by the Hindoos. The entrance was barred by a locked gate; it is said by the natives (*credat Judæus*) to communicate with another similar cavern on the hill of Nageswar, also said to be of laterite, about three coss to the S. W. Near the mouth is one of those remnants of the strange ophitic adoration that prevailed over great part of S. India, in the shape of an image, of which the upper portions resemble those of a young female, and the lower terminating in the coils of a serpent.* Ingleswara is famed in Hindoo annals as the place where the nuptials of Buswapa the founder of the great sect of Jungums and Singayets, and the overthrower of the Jain dynasty of Calliany, were celebrated. The small laterite hill of *Hori muth* his birth place, is at a little distance.

From Ingleswara to about 11 miles S. W. of Bagwari, trap, wacke and amygdaloid form the basis of the plain where its southern limit is again crossed to the hypogene area. A reddish felspathic zone, similar to that already noticed in the Bejapore notes, intervenes between the trap and the gneiss, which is first seen to outcrop in the bed of a nullah between the villages of Hungraghi and Wondal, where a section is afforded showing the thinned-out edges of this great coulée of trap resting on and coating the reddish intervening felspar zone. This zone, or salbande, is probably nothing more than the altered gneiss.

The mica in the gneiss is replaced by hornblende and at a little distance, the gneiss passes into hornblende schist. Both rocks are highly inclined, dipping westerly; gneiss, felspathic veined and interspersed

* We have in the Museum a *double* image of this kind formed by two female busts with serpent terminations.—Eds.

with quartz continues to the left or N. bank of the Kistnah to Chimlaghi where it disappears under beds of a bluish limestone resembling that of Firozabad. The gneiss is in some situations capped by laterite fragments of a greyish blue and buff limestone; the latter crystalline and effervescing feebly with acids, and penetrated by tortuous veins of the dark chert. A few globular boulders of granite and greenstone are scattered over the low hill of Chimlaghi, out of the reach of the floods of the Kistnah. They have a rugged waterworn exterior. The hill itself is capped with a layer of kunker, varying in thickness from a few inches to five feet, imbedding nodules of a ferruginous clay and angular fragments of a grey and dark coloured chert, a bed of which is seen intervening between the limestone and the gneiss. The kunker bed rests upon disturbed strata of the bluish limestone, so much broken up that it was impossible to ascertain the dip, or direction of the rock. The gneiss underlying the limestone imbeds crystals of calc spar.

From the junction of the Kistnah, and the Gutpurba near Chimlaghi, by Kulladghi, to the West of the falls of Gokauk on the eastern flank of the Western Ghauts a limestone and sandstone formation supposed to be identical with those of Cuddapah and Warapilly, extends, with partial outcroppings of the hypogenes, and a few patches of overlying trap and laterite. The nature of the rocks composing the summits of the Ghauts immediately behind the falls of Gokauk have not been noticed. A little further south they are composed of the hypogene schists and granitic rocks covered, partially, to the Sea at Goa, Vingorla and Malwan by laterite. North of Malwan the overlying trap is almost the exclusive rock seen to Surat. Of the geology of the Southern Mahratta country I intend speaking more fully in a subsequent paper.

Proceedings of the Asiatic Society.—JANUARY, 1844.

(*Wednesday Evening, the 3rd January, 1844.*)

The monthly Meeting of the Society was held at the rooms on Wednesday evening, the 3rd January, at the usual hour. The Honorable W. W. Bird, President, in the chair.

The election of officers for the year 1844, was the first business of the meeting, and it was agreed that those of 1843 should be requested to continue. The name of Dr. A. Sprenger, B. M. S. was added to the Committee of Papers.*

R. Macdonald Stephenson, Esq. proposed at the last meeting, was ballotted for and elected. The usual communication was ordered to be made to him.

Proposed as an Honorary Member by the Hon'ble the President, and seconded by the Secretary :—

John, Prince of Saxony, brother to the reigning king.

In proposing this illustrious personage as an Honorary Member, the Honorable the President and Secretary stated, that they had done so not only in consequence of his general and well-known proficiency in literary and scientific pursuits, but specially with reference to his high attainments as a Sanscrit scholar, and his unvarying patronage on all occasions of oriental scholars and oriental literature.

The Sevres Medallion of Major Rennel, presented at the meeting of November 1843, which had been framed in black marble, was now exhibited.

The Committee named at the December meeting, to settle the form of the inscriptions on the marble tablets beneath the busts, and the height of the pedestals for them, exhibited the tablets as prepared, and referred to the bust of Mr. James Prinsep, which had been placed on a temporary stand at the height they thought suitable, for the opinion of the meeting. It was resolved, that the alteration be made as proposed.

Read the following letter addressed to the Secretary by Mr. W. Prinsep :—
To H. TORFENS, Esq. Vice President and Secretary of the Asiatic Society, Calcutta.

DEAR SIR,—I have the honor to acknowledge your two letters of the 28th July, one to myself in conjunction with my brother H. T. Prinsep, Esq., the other to Sir Edward Ryan, with a request to procure Kit Cat Portraits of each of these gentlemen.

I have seen these gentlemen, and we are next week to decide upon the artist and time of sitting, regarding which I shall have the pleasure of addressing you by

* N. B.—The names of Officers and Members of the Society, as they stand at the commencement of 1844, will be found at the end of the present Number.

next mail; in the meantime, as it is usual to pay down to the artist half the cost upon the first sitting, and as I believe they will cost Eighty Guineas each, I shall be glad if you will at once remit the amount necessary for this purpose. Yours faithfully,

London, 14th November, 1843.

W. PRINSEY.

Ordered, that the remittance desired be made by a safe channel.

The following list of Books, presented and purchased, was read:—

Books received for the Meeting of the Asiatic Society, on the 3d January, 1844.

Meteorological Register kept at the Surveyor General's Office, Calcutta, for the month of November 1843.—From Government.

Calcutta Christian Observer, new series, vol. 5, No. 49, January 1844.—From the Editor.

Oriental Christian Spectator, 2d series. Bombay, December 1843, vol. 4, No. 12.—From the Editor.

Jameson's Edinburgh new Philosophical Journal. Edinburgh, 1843, vol. 35, No. 69.—From the Editor.

London, Edinburgh, and Dublin Philosophical Magazine and Journal of Science London, 3d series, vol. 22, Nos. 147, 148; vol. 23d, Nos. 149, 150.—From the Editor.

Proceedings of the Geological Society of London, 1842-43, vol. 4, pt. 1st, No. 92, and Index to vol. 3, November 1838 to June 1842.—Presented by the Society.

List of the Members of the Geological Society of London, 1st March 1843.

Society for the Encouragement of Arts, Manufactures, and Commerce. Premiums for the Sessions, 1843-1844, 1844-1845. London 1843.—Presented by the Society, (two copies).

Jerdon's Illustrations of Indian Ornithology. Madras, 1843, No. 1, (two copies).—Purchased.

Graberg de Hemso, Ultimi Progressi della Geografia. Milano, 1843.—Presented by the Author.

Lassen de Taprobane insula veteribus cognita Dissertatio. Bonnæ, 1842. Pamph.—From the Author.

Moise de Khoréne, Auteur du ve. Siecle. Histoire D'Armenie, Texte Armenien et traduction Française par P. E. Le Vaillant de Florival. Venise, 1841, 2 vols. 8vo.—Presented by J. Avdall, Esq.

Bulletin de la Societe de Geographie, 2d serie. Paris, 1842, tome 18.—Presented by the Society.

Journal Asiatique ou Recueil de Memoires, 3d serie. Paris, November, December 1842, tome 14, No. 79, et 4th serie. Mars, 1843, tome 1, No. 3.—Presented.

Annales des Sciences Physiques et Naturelles, D'Agriculture et D'Industrie Lyon, 1838-40, 3 vols. 4to.—Presented.

Journal des Savants. Paris, 1843, Avril, Mai, et Juin.—Purchased.

The Librarian also presented a condensed report of the Books and Pamphlets added to the Library during the year 1843, which was ordered to be printed, and will be found at the conclusion of the Proceedings.

Dr. A. Sprenger submitted a specimen sheet of the Dictionary of Suffectic Terms now printing by the Society under his supervision.

Read the following letter from Messrs. W. and H. Allen and Co. the Society's Agents and Booksellers :—

To H. TORRENS, Esq. Secretary to the Asiatic Society of Bengal.

SIR,—We have received your favor of the 18th July last, enclosing a bill of lading for a case of Books for Mr. Konig, and also a letter for that gentleman has been received, and shall have our attention on the arrival of the Ship "Cuthbert Young," by which vessel the box is consigned to us.

Your favor of the 28th July, enclosing a letter for Sir Edward Ryan and H. T. Prinsep, Esq., also one for H. T. and W. Prinsep, Esqrs. have both been delivered to the latter gentleman, the two former being absent from London at the time of the receipt of the letters by us.

Your further favor of the 7th August, enclosing a bill of lading for 25 copies of the Mahabarata, complete, and the same No. of the Index only, shipped by the "City of Poonah," has duly come to hand, but the arrival of the vessel is not expected for some time.

We have the honor to be, Sir,

London, 31st October, 1843.

Your most obedient servants,

W. H. ALLEN & CO.

Read the following letter and enclosure from the Librarian :—

To H. TORRENS, Esq. Secretary, Asiatic Society.

SIR,—I have the honour to forward you the accompanying note of Messrs. Thacker and Co. who apply for a deduction of 25 per cent. on the Tibetan books, which appears to have been formerly granted to them by the Secretary of the Society on the Asiatic Journal.

In laying this request of Messrs. Thacker and Co. before the Committee, I would beg to suggest to them to pass a rule, respecting the sale of all their publications to booksellers, and should such a deduction be conceded, to ask in return the same allowance from them.

I have the honour to be, Sir,

Your most obedient servant,

Asiatic Society, 21st December, 1843.

E. ROER.

Enclosure: Messrs Thacker and Co.'s. compliments to Dr. Roer, and beg to state, that they have been in the habit of paying only 1-8 per No. for the Asiatic Society's Journal, the usual charge being 2, from which a discount of 25 per cent. is allowed to them. Messrs. Thacker and Co. will thank Dr. Roer to send the voucher, as they think they only received Nos. 47 and 48. They will further feel obliged, if he will kindly take off the usual allowance for the two Tibetan books.

Calcutta, 18th December, 1843.

After some conversation it was agreed on, that the allowance desired, should be made, upon condition that it should be reciprocal.

Read the following letter from the Secretary to the Société Royale d'Agriculture, &c. &c. of Lyons :—

Le Secrétaire-Archiviste de la Société Royale d'Agriculture, Histoire Naturelle et Arts utiles de Lyon.

MONSIEUR LE PRESIDENT.—Je suis chargé au nom de la Société Royale d'Agriculture de Lyon de vous offrir la collection de ses Annales pour la Société du Bengal.

Nous nous estimerons heureux si la compagnie savante que vous présidez jugera le recueil assez digne d'intérêt pour nous honorer d'un échange de ses travaux.

Veuillez agréer, je vous prie, Monsieur, le sentimens de haute considération avec lesquels.

Lyon, le 1ere Jun, 1841. Votre tres humble et obeissant serviteur,
A Monsieur le Président de la Société du Bengale. G. MULANT

Ordered, that a copy of the Journal be regularly dispatched to this Society.

Read the following letter from Capt. Bonnevie :—

To H. TORRENS, Esq. Honorary Secretary to the Asiatic Society.

SIR,—I had the honour in April or May last, to forward you a letter from the University of Christiania in Norway, accompanied by various specimens of natural history, minerals, coins, books, &c. &c. which you did me the honour favorably to acknowledge, expressing your willingness to readily reciprocate. Desirable opportunities now offer themselves for the dispatch of any variety which your Society may be pleased to present to the Christiania University by vessels bound to London, and any communication addressed to the Swedish and Norwegian Consul General in that port, Chas. Tottie, Esq. will be duly dispatched, or if forwarded to my friends, Messrs. J. Mackey and Co. of this city, they will be duly cared for, and forwarded to their destination.

I have the honour to be, Sir,

Calcutta, 30th December, 1843. Your most obedient servant,
C. S. BONNEVIK.

The Secretary was requested to inform Capt. Bonnevie, of what had been already dispatched to the University from the Library and Zoological Department, and what was in train of being so, from other departments.

Read the following letter from J. Avdall, Esq.:—

To H. TORRENS, Esq. Secretary, Asiatic Society.

MY DEAR SIR,—Herewith I beg to send you, for presentation to the meeting of the Asiatic Society, a copy of the History of Armenia, by Moses Khorenensis, translated into French by P. E. Le Vaillant De Florival, and printed with the Text at Venice in 1841, 2 vols.

I remain,

Your's faithfully,
JOHANNES AVDALL.

Calcutta, 30th December, 1843.

Messrs. Ostell and Lepage having sent two Numbers of the Zoology of the Voyage of H. M. S. *Sulphur*, Capt. Belcher, for inspection, a subscription for one copy on the part of the Society was authorised.

Read the following letter, accompanying two Models of a Boat and Float which were on the table :—

W. H. TORBENS, Esq. *Secretary to the Asiatic Society.*

SIR,—Having two models of Steamers on the Archimedean principle, I am desirous to place them in the Museum, with the view of exposing them to the gentlemen of Calcutta, who may honour that place with their presence, in the hope of meeting with encouragement to get up a vessel on this plan for inland navigation, in which I would wish to take share and devote my time to the furtherance of, after May next; otherwise I would dispose of them at a moderate price; and shall feel obliged by your kindly allowing them to be placed there for a short time.

I shall be happy at any time to set them in motion in a trough of water, for the satisfaction of gentlemen wishing to see them act. I remain, Sir,

Your obedient servant,

Calcutta, 23rd December, 1843.

GEORGE NICKS, *Engineer,
Hon'ble Co's. Service, Kidderpore.*

Read the following letter from G. Buist, Esq. Bombay.

DEAR SIR,—The Bengal Asiatic Society appears to be under a misapprehension as to there being any reprint of the Transactions of the Bombay Branch, there is none such. I believe the new issue for two years past, in process of publication, has always been forwarded to Calcutta.

The misapprehension may have arisen from the circumstance of the Bombay Geographical Society being presently engaged in reprinting their transactions: these have been desired to be sent to you, and I shall take care that they are duly forwarded the moment they have passed through the press. The printer is now far advanced with them.

The reports of the Observatory formerly applied for through Government, will be completed very shortly, and sent to your address.

I have the honour to be, Sir,

Your most obedient servant,

Bombay Observatory,

28th November, 1843.

GEO. BUIST,
Secretary to the Geographical Society.

A catalogue of the additions to the Library was presented by the Librarian, and ordered to be printed with the January (the present) number of the Journal. Account sales of Oriental publications was also submitted as follows :—

<i>Oriental Publications, &c. sold from the 9th January up to the 14th December, 1843.</i>	<i>Rs. As.</i>
Mahabharata, vols. I to IV, 8 copies each,	320 0
Index to ditto, vols. I, II, III, 6 copies each, and vol. IV, 7 copies,	37 8
Naishada, 3 copies,	18 0
Sausruta, vols. I and II, 1 copy each.	8 0
Hariwansa, 1 copy,	5 0
Sanskrit Catalogue, 2 copies,	2 0
Futawe Alemgiri, vol. I, one copy; vol. II, one ditto; vol. III, 2 ditto; vol. IV, 8 ditto; vol. V, 10 ditto; vol. VI, 9 ditto,	<u>250 0</u>
Carried over,	640 8

Brought over,	..	..	..	..	..	..	640	8
Jawame-ul-ilm-ul-riazi, one copy,	..	..	..	..	..	..	4	0
Khazanat-ul-ilm, one copy,	..	..	..	..	..	..	8	0
Sharaya-ul-Islam, 2 copies,	..	..	..	..	..	..	16	0
Asiatic Researches, vols. XVIII, 1 copy; XIX, 1 ditto; XX, 2 ditto,						..	40	0
Journal of the Asiatic Society, Nos. 52, 56, 61, 65, 84, 90, 103 to 119, 125 to 130, and Supplement to No. 126, one copy each,			..	..	..	..	61	8
							Total Rupees	760 0

E. ROKE,

*Calcutta, the 2d January, 1844.**Librarian, Asiatic Society.*

Read report of the Curator Museum of Economic Geology, for the month of December.

REPORT OF THE CURATOR MUSEUM ECONOMIC GEOLOGY AND MINERALOGICAL DEPARTMENT, FOR THE MONTH OF DECEMBER.

Mineralogical and Geological.—I have been unable to complete, for this month, the arrangement of the specimens brought by Capt. Russell from the Cheduba Archipelago, but I trust to do so by next month. I have moreover not yet obtained Capt. Russell's detailed report.

Capt. Newbold, M. N. I. has sent us from Kurnool three small, but very curious, specimens of "organic bodies in a vein of chert in the Kurnool limestone." When examined by a magnifier, these are seen to be minute nummulites, more or less silicified. None of them effervesce with acids, though the matrix in the less compact looking parts does so. It is probable that the limestone would be also found to contain these bodies, either at the spot these were found, or in the vicinity of it. In a geological point of view, the presence of the fossils of so recent a formation in that quarter of India is highly interesting.

Museum Economic Geology.—Capt. Shortrede has, at my request, kindly sent us a box, containing eight specimens of tolerable size of the lithographic stones from near Rewah, of which impressions and specimens were presented at the September and October meetings; these are now in the hands of Mr. Black for trial and report.

Mr. W. C. Drew has presented us with a mineral, which though common enough in itself, is from its locality of considerable interest. It is a fragment of argentiferous lead ore from Adelaide in Australia: of which I learn that so large a quantity as eight tons had been sent from that port to Sydney for smelting.

Capt. Oldfield, Executive Engineer of the Saugor division, has presented us with a very interesting set of specimens of iron ores, and other minerals from that district. His letter is as follows:—

To H. PIDDINGTON, Esq. Curator of the Economic Museum, Calcutta.

SIR,—Having been favoured by you with a copy of the printed Memorandum relative to the objects of the Museum of Economic Geology, I took the opportunity of passing through the town of Heerapoor in Bundelkund, to observe the method of smelting, and to collect some iron ores from that district.

The large specimen marked 'Heerapoor iron ore,' shews the average quality, of which the quantity is unlimited. The whole neighbourhood may be said to abound in iron, the ore is at the surface, or rather the mines are mere caves in iron rocks. The iron stone

is first broken down, and afterwards into smaller pieces of about an inch in diameter, by small hand hammers, mixed with double its weight of charcoal, and put into clay furnaces about 5 feet high and one-half in diameter, the draft is given by a hand bellows, the nozzles of which are of fine clay and require constant renewal.

The slag is drawn off by tapping the lower part of the furnace; the iron however is not completely fused, but is taken only by tongs through the top of the furnace; after withdrawal of the slag. At this stage, it is of a pale straw colour, and is at once subjected to hammering, by which it loses one-third of its weight, this hammering being continued till the iron is cool, it is then considered ready for forging. As a specimen of the manufactured iron, I send half a tawa, or scone for baking chupattes, weighing about 4lb.

I send also some specimens of iron ore kindly collected at my request for the Museum, by Lieut. Turner, 51st N. I. when that officer was on detached duty at Tendookheru, a village south of Saugor, and within a few miles of the Nerbudda. From these mines, the iron of which Col. Presgrave formed the bars for the Suspension Bridge over the Beas river near Saugor, was procured.

No. 1, is the rock of which the hills containing the ore mostly consist.

No. 2, is the ore.

No. 3, Slag.

No. 4, Iron from the furnace, unrefined by forging.

From the neighbourhood of Saugor I send specimens of Kunkur, No. 5 and 8 of which, should you have leisure, I should be glad to obtain a correct analysis.

The specimens of mortar or concrete which I send, were formed from a mixture of lime made from kunkur No. 5, with gravel and tile dust. One specimen had water poured on it a few minutes after it was mixed, and commenced hardening from that moment; the surface set very quickly; the lime used was rather stale, having been burned upwards of a month, and exposed to a damp atmosphere. It was carefully ground, however, a measure essential to the goodness of mortar made with kunkur or other hydraulic limes. I have added some specimens of limestone marked No. 6, found in masses or boulders imbedded in the black soil of the Saugor district, and a specimen of the red sandstone of that part of the country, which in many places is in laminæ sufficiently thin to be used for roofing purposes in lieu of slates. It is likewise found in slabs, used in thicknesses of 3 or 4 inches as architraves, having a bearing of from 6 to 8 and even 10 feet. This stone is likewise in general use for marble masonry, being more commonly found massive or with irregular lamination.

I take the opportunity of adding as mere matters of curiosity, at least, without reference to any building or other useful purpose in the Saugor district,

A specimen of granite from Debsor river in Bundelkund.

A specimen of a dark compact rock with the character of which I am unacquainted.* From the position in which I found it, I believe it to extend over a large tract of country in the Jhansi state on the left bank of the Debsor, at a depth of from 30 to 40 feet from the surface.

* I have the honour to be, Sir,

Your most obedient servant,

J. N. OLDFIELD, Capt.

Executive Engineer, Saugor Division.

7, Russell Street, Chouringhee,

December 2d, 1843.

* It is an indurated and somewhat fibrous clay slate.—H. P.

ABSTRACT

Of the List of Books received into the Library, from the 13th January to the 6th December 1843.

Note.—The number of all the Books, received during last year, amounts to 391.

English Books.

- Annals and Magazine of Natural History. London, Nos. 62, 63, 64, 65, 69, 71, 72, 75, 76,—9 Nos. Archæologia, or Miscellaneous Tracts relating to Antiquities. London, 1842, Vol. xxix,—1 vol. Arrowsmith's Map of India. London, 1840, 1 No. Audubon's and Bachman's Descriptions of new species of Quadrupeds inhabiting North-America. 1 pamphlet. Bernier's Travels, comprehending a description of the Mogul Empire, translated from the French by J. Stuart. Calcutta, 1826, 1 vol. Batten's Report on the Settlement of the district of Gurhwal, in the province of Kemaou. Agra, 1843, 1 pamphlet. Buit's Comparative Readings of Eight Barometers. 1843, (a leaf,) 1 No. Calcutta Christian Observer. New Series. Nos. 37 to 40, 42 to 48, 11 Nos. Calcutta Literary Gleaner, 1842, Vol i, Nos. 11 and 12, 1843-Vol. ii, Nos. 1 to 8, 10 Nos. Calcutta Journal of Natural Science, 1843. Vol. iv, No. 15. 1 No. Calendars of the Proceedings in Chancery in the reign of Queen Elizabeth. 8 vols. Callery's Encyclopedia of the Chinese Language. London, 1842. 1 pamphlet. Collection of Papers regarding the course of the Indus, and especially of its Eastern Mouth and the Branches falling into the Run, of Cutch. Calcutta, 1842, 1 vol. Darwin's Journal of Researches into Geology and Natural History. London, 1839, 1 vol. Documents relating to the Gates of Somnath. 1 pamphlet. Early Records in Equity. Calcutta, 1842. 1 vol. Francis's and Craft's Chemical Gazette. 1842, No. 1, 1 No. Goodwyn's Memoir of an improved system of Suspension-Bridges, on the principle adopted by Mr. Dredge. Calcutta, 1843, 1 pamphlet. Gould's Monograph of the Ramphastidæ, or Family of Toucans. London, 1834. 1 vol. Gray's List of the Genera of Birds. London, 1841, 1 vol. — Speciegia Zoologica pt. i, 1 No. — Zoology of the Voyage of H. M. S. Sulphur, Mammalia pt. i. London, 1834, No. 1, 1 No. Gutch's Quarterly Journal, Vol. i, No. 6, 1 No. Hart's Report on the Trade and Resources of Kurrachee. Calcutta, 1843, 1 vol. Herapath's Railway and Commercial Journal, 1843. Vol. v, No. 178, 1 No. Ibn Khallikan's Biographical Dictionary, translated from the Arabic by Baron MacGucklin de Slane. Paris, 1842, Vol. i. 1 vol. Jameson's Edinburgh New Philosophical Journal, Nos. 63, 66, 67, 68. 4 Nos. Journal of the Agricultural and Horticultural Society of India, 1842, Vol. i and Vol. ii, Nos. 1 to 9, 1 vol. 9 Nos. — of the Bombay Branch Royal Asiatic Society, Nos. 4 and 5, 2 Nos. — of the Royal Geographical Society of London, 1842, Vol. xii, pts. 1 and 2, 2 Nos.

- Landers' Memoranda upon the State of Indian Bazaar Weights and Measures. Calcutta, 1843, 1 pamphlet.
- Leach's Zoological Miscellany. London, 1814-17, 3 vols.
- List of Members and Correspondents of the Academy of Natural Sciences of Philadelphia, 1 pamphlet.
- of the Fellows, Members, &c. of the Zoological Society of London. 1812, 1 pamphlet.
- London, Edinburgh and Dublin Philosophical Magazine and Journal of Science. 3d Series, Nos. 134 to 142, and 145 and 146, 11 Nos.
- Martyn's English Entomologists, exhibiting all the Coleopterous Insects, found in England. London, 1792, 1 vol.
- Meteorological Register, kept at the Surveyor General's Office, Calcutta, January to December, 1840. March, April, July and September 1841, November 1842, January to April, and June to October 1843, 26 Nos.
- Miles' Translation of the History of Hydur Naik. London, 1842, 1 vol.
- Moffon's Catalogue of the Skulls of Man, and the inferior Animals. Philadelphia, 1840, 1 pamphlet.
- Crania Americana, or Comparative View of Skulls of various Aboriginal Nations of North and South America. Philadelphia, 1839, 1 vol.
- Ditto ditto, (from the American Journal of Science and Arts. (Vol. viii, No. 2,) 1 pamphlet.
- Description of some new species of Organic Remains of the Cretaceous group of the United States. Philadelphia, 1842, 1 pamphlet.
- Inquiry into the distinctive characteristics of the Aboriginal races of America. Boston, 1842, 1 pamphlet.
- Memoir of W. Maclure. Philadelphia, 1841. 1 pamphlet.
- Remarks on the so-called Pigmy race of the Valley of the Mississippi, 1 pamphlet.
- Some remarks on the Ancient Peruvians. Philadelphia, 1842, 1 pamphlet.
- Naturalist's Library. Ichthyology, Vol. iv, British Fishes. Sun Birds, Vol. xv. 2 vols.
- Niebuhr's History of Rome. London, 1842, Vol. iii, 1 vol.
- Newbold's and Wilson's Chinese Secret Triad. Society of the Tien-ti Huuh, 1 pamphlet.
- British Settlement in the Straits of Malacca. London, 1839, 2 vols.
- Mineral Resources of Southern India. 1 pamphlet.
- Nicollet's Essay on Meteorological Observations, 1839, 1 pamphlet.
- Oriental Christian Spectator, 2nd Series. Bombay, 1842, Vol. iii, Nos. 8, 11, 12, 1843; Vol. iv, No. to 11, and the Supplement, 14 Nos.
- Papers regarding the Scinde and Begarree Canals. Calcutta, 1843, 1 pamphlet.
- Pinnock's and Moore's Report of Experiments of the actions of the Heart. Philadelphia, 1839, 1 pamphlet.
- Penny Cyclopædia of the Society for the Diffusion of Useful Knowledge. London, 1833 to 42, 24 vols.
- Fiddington's Chart of the 8th Memoir on the Law of Storms in India, being the track of the Madras Hurricane of the 24th October, 1842, over the Peninsula of India and the Arabian Sea. 2 pamphlets.
- English Index to the Plants of India. Calcutta, 1832, 1 vol.
- Tabular view of the Generic Characters of Roxburgh's Flora Indica, 1836, pt. 3d, 1 No.
- Pratt's Mechanical Philosophy, second edition. 1 vol.
- Proceedings of the Academy of Natural Sciences of Philadelphia. Nos.—to 25 (11 to 16, two copies,) 31 Nos.
- of the American Philosophical Society, 1841-42. Vol. ii, Nos. 9 to 14, and 18 to 20, 11 Nos.
- of the Geological Society of London, 1840-42. Vol. iii, pt. ii, Nos. 72 to 76 and 87 to 91, 10 Nos.
- of the London Electrical Society, 1842-43, Vol. i, pts. 5, 6, 7, and 8, 4 Nos.
- of the Zoological Society, 1841, pts. 9 and 10, 2 Nos.
- Redfield on Whirlwind Storms, with Replies to the Objections and Strictures of Dr. Hare. New York, 1842, 1 pamphlet.

- Redfield's Reply to Dr. Hare's further Objections relating to Whirlwind Storms. 1 pamphlet.
- Report of a Committee (appointed,) of the British Association for the Advancement of Science, 1842, 1 pamphlet.
- ____ of the British Association for the Advancement of Science and Arts, 1842, 1 vol.
- ____ on the Kuleeree Canal, 1840. 1 pamphlet.
- ____ on the strength of Materials for Steam Boilers. Philadelphia, 1837, pt. ii, 1 No.
- Richardson's Persian, Arabic and English Dictionary, by F. Johnson. London, 1839, 1 vol.
- Rogers' Third Annual Report on the Geological Survey of the State of Pennsylvania. Harrisburgh, 1839, 1 pamphlet.
- Ross's Survey of Cheduba Straits and Coasts of Ramree, 1832, (a leaf,) 1 No.
- Royle on the Production of Isinglass. London, 1842, (two copies,) 2 pamphlets.
- Say's Description of some new Terrestrial and Fluvial Shells of North America. 1 pamphlet.
- Second Bulletin of the Proceedings of the National Institution for the Promotion of Science. Washington, 1842, No. 2d, 1 No.
- Selections from the most remarkable and interesting of the Fishes found on the Coast of Ceylon, 2nd Edition. London, 1843, 1 vol.
- Smith's Illustrations of Zoology, 1838-43, No. 1 to 14, 16 and 17, 16 Nos.
- Specimens of the Popular Poetry of Persia, translated by A. Chodzko. London, 1842, 1 vol.
- State of New York in Assembly 1840, No. 50, and 1841, No. 150, 2 Nos.
- Stevenson's Translation of the Sanhita of the Sama Veda. London, 1842, (two copies,) 2 vols.
- Survey of the Route from Kurrachee to Sehwan. Calcutta, 1843, 1 vol.
- Swainson's Zoological Illustrations. London, 1820-23, 1st Series 3 vols. 1829-33, 2nd Series 3 vols 6 vols.
- Transactions of the American Philosophical Society. New Series, Philadelphia, 1841. Vol. iii, pt. i, 1 No.
- ____ of the Geological Society, 2nd Series. London, 1842, Vol iv. pt. ii, 1 No.
- ____ of the Royal Astronomical Society. London, 1842-43, Vols. 12, 13 and 14, 3 vols.
- ____ of the Society of Arts, &c. Vol. lxxii, pt. ii, 1 No.
- White's Icones Plantarum Indie Orientalis. Madras, 1842. Vol. ii. pt. iv, 1 No.
- Wilcock's Dictionary of the English and Dutch, Dutoh and English Languages. London, 1798, 1 vol.
- Wood's Memoir of the Life and Character of the late J. Parriah. Philadelphia, 1840, 1 pamphlet.
- Yarrell's History of British Birds. London, 1842, Vol. i, pts. xxi and xxxiv to xxxvii, 5 Nos.
- French.*
- Actes de L'Académie Royale de Sciences, Belles-Lettres et Arts de Bordeaux, 1840, 2d Année, iv. Trimestres, 1841; 3d Année iv, Trimestres, 1842, 4th Année, i Trimestre, 9 Nos.
- Bibliothèque de M. Le Baron S. de Sacy. Paris, 1842, tome 1, 1 vol.
- Bulletin de la Société de Géographie, 2d Series. Paris, 1842, tome 17, 1 vol.
- Callery, Dictionnaire Encyclopédique de la langue Chinoise. Paris 1842, 1 vol.
- Delessert, Souvenirs d'un Voyage dans l'Inde, exécuté de 1838 à 1839. Paris, 1834, 1 vol.
- Fabius, Aoffrande au Dieu de l'Univers. Lyon, 1842, 1 pamphlet.
- Foucaux, Discours prononcé à l'ouverture du Cours de l'angue et de littérature Tibétaine, 1 pamphlet.
- ____ Extrait du Kan-Jour. Paris, 1842, 1 pamphlet.
- Hemso (G. de) Observations authentiques sur la Peste du Levant. 1 pamphlet.
- Journal Asiatique. Paris, 3d Série, tome xlii, Nos. 73, 74 and 75, tome xiv, Nos. 76, 77 and 78, 4 Série, tome i, Nos. 1 and 2, 8 Nos.
- ____ des Savants. Paris, Juillet à December, 1842, Janvier, Février, Mars. 1843, 9 Nos.
- Julien, Exercices pratiques d'analyse de Syntaxe et de Léxicographie Chinoise. Paris, 1842, 1 vol.
- ____ Simple exposé d'un fait honorable odieusement dénaturé dans un libelle récent de M. Pauthier. Paris, 1842, 1 pamphlet.
- Mémoire sur le Lac Märis, par L. de Bellefonda. Alexandrie, 1843, 1 pamphlet.
- Pauthier, Examen Méthodique des faits qui concernent Lo Thean—Tchu ou L'Inde. Paris 1840, 1 pamphlet.

Réponse à l'examen Critique. Paris, 1842, Vindiciae Sinicæ. Dernier réponse à M. S. Julien. Paris, 1842, 1 pamphlet.

Roberts, Fragment d'un Voyage dans les Provinces Interieures de L'Inde, en 1841. Paris, 1843, 1 pamphlet.

Tassy, (G. de.) Chapitre inconnu du Coran. 1 pamphlet.

— Saade, auteur des premières Poésies Hindouostani. Paris, 1843, 1 pamphlet.

Latin.

Callery, Systema Phoneticum Scripturæ Sinicæ. Macao, 1841. Paris i and ii, 2 Nos.

De numis medii ævi, in Norvegia nuper repertis. Particula Posterior. 1837, 1 pamphlet.

Ebermayer, Gemmarum affabre Sculptarum Thesaurus, 1720, 1 vol.

Gazophylacium lingue Persarum, Authore P. Angelo a S. Joseph. Amstelodami, 1684, 1 vol.

Hansteen, De mutationibus Virgæ Magneticæ, 1842, 1 pamphlet.

Holmboe, De Prisca re Monetaria Norvegiæ, scripsit, 1841. 1 pamphlet.

— Descriptio ornamentarum aureorum et numerorum in Norvegia Repertorum. 1826, (two copies,) 2 pamphlets.

Index Scholarum in Universitate Regia Fredericiana 59 ejus semestri, 1842, (two copies,) 2 pamp.

Norwegian.

Aarsberetning for det Kongelige Norske Frederiks Universitets for Aaret, 1840, 1 pamphlet.

Abel's Værker 2 Band, (œuvres complètes du Mathématicien Novégien N. H. Abel, redigées par ordre du Roi, par B. Holmboe,) 2 vols.

"Heimskringla" eller Snorre Sturlesons norske Kongers Sagaer, med 3de Karter og fure Staal-stet, 1 vol.

Indby delsesskrift i anledaring af den Hertidelige nedlæggelse af Grundstenen til nye Bygninger for det Kongelige norske Frederiks Universitet trediveaarsdagen efter dets stiftelse den 2den. September, 1841, 1 pamphlet.

Lærebog i Mechaniken af Chr. Hansteen. 2 Bind, 2 vols.

Norges Statistik af Schweigaard, 1st del, 1 vol.

Nyt Magazin for Naturvidenskaberne, 11 hæfter, 11 Nos.

Rafn, Antiquitates Americanæ. Hafniae, 1837, 1 vol.

Statistiske Tabeller for Kongeriget Norge, 1er till 5th. Raekk, 5 vols.

Universiteterne i Christiania og Upsala, 1 vol.

German.

Bopp, Vergleichende Grammatik des Sanskrit, Zend, Griechischen, &c. &c. Berlin, 1842, 1 vol.
Gaea Norvegica, 1838. Erstes Heft, 1 vol.

Italian.

Memso, (G. de) Degli ultimi progressi della Geographia. Milano, 1841-42, 2 pamphlets.

Zend.

Vandidád Sád of the Parsis, in the Zend language, but Gujarati character, by the late Framji Aspandiáryi, 1842, 2 vols.

Chinese.

Chinese wood engraving and description of the Porcelain Tower of Nankin, (a leaf,) 2 Nos.

Arabic.

Hashia Saddoor Rúddín Mohammed Amin, MS. 1 vol.

Hashia Sayid Sherrif, MS.

Persian

Diwan Sherrif, MS. 1 v.1.

Jawaherul Koran, MS. 1 vol.

Sanskrit.

- Goladhyáya, by Bháshkara Achárya. Edited by L. Wilkinson. Calcutta, 1842, 1 vol.
 Grahlághava, by Malléri. Edited by L. Wilkinson. Calcutta, 1843, 1 vol.
 Gunitádhýáya, by Bháshkara Achárya. Edited by L. Wilkinson. Calcutta, 1842, 1 vol.
 Johnson's Selections from the Mahabharata. London, 1842, 1 vol.
 Sanhita of the Sama Veda. London, 1843, 1 vol.
 Wilson's Megha Duta, or Cloud Messenger. London, 1843, 1 vol.

Amount of Books in each Language.

English,	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	293
French,	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	43
Latin,	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	11
Norwegian,	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	26
German,	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2
Italian,	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2
Zend,	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2
Chinese,	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2
Arabic,	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2
Persian,	2	
Sanskrit,	6	
														Total,	391

OFFICERS OF THE ASIATIC SOCIETY FOR 1844.

— 0 —

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The Honorable W. W. Bird, Esq.

<i>Vice Presidents,</i>	{ The Right Revd. The Lord Bishop of Calcutta. The Honorable Sir J. P. Grant. The Honorable Sir H. Seton. H. W. Torrens, Esq.
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Secretary, H. W. Torrens, Esq.,
Sub-Secretary, H. Piddington, Esq.

Committee of Papers.

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<i>Booksellers and Agents in London, ..</i>	<i>Messrs. W. and J. Allen, Leadenhall street</i>

LIST OF MEMBERS

Of the Asiatic Society of Bengal, on 1st January, 1844

Anderson, Major W.	Forbes, Lieut. Col. W. N.
Avdall, J. Esq.	FitzGerald, Major W. R.
Bird, Hon'ble W. W.	Fulton, Esq. J. W.
Barlow, Esq. R.	Grant, Hon'ble Sir J. P.
Bayley, Esq. H. V.	——— Esq. W. P.
Bogle, Capt. A.	——— Esq. J. W.
Boys, Capt. W. E.	Gladstone, Esq. M.
Birch, Capt. F. W.	Goodwyn, Capt. H.
Bigge, Lieut. H. L.	Ganthony, Esq. J.
Brandreth, Esq. J. Esq. J..	

By an oversight, the list of Members of the Society intended for the present No. was published with No. CXLIV. Another is now given, and the former one may be cancelled.

Cameron, Hon'ble C. H.	Jackson, Esq. W. B.
Cautley, Capt. P. T.	Jenkins, Major F.
Campbell, Esq. A.	Jameson, Dr. W.
Cheap, Esq. G. C.	Karr, Esq. W. Seton
Connoy Loll Tagore, Baboo	Kistnoth Roy, Bahadoor, Rajah
Cust, Esq. R.	Lushington, Esq. G. F.
Corbyn, Esq. F.	——— Esq. E. H.
Dunlop, Esq. A. C.	Loch, Esq. G.
Durand, Capt. H. M.	Long, Rev. J. Associate Member.
Dwarkinath Tagore, Baboo	
Edwards, Esq. W.	Maddock, Hon'ble T. H.
Egerton, Esq. C. C.	McQueen, Rev. J.
Earle, Esq. W.	Mansel, Esq. C. G.
Everest, Lieut. Col. G.	McKenzie, Esq. J.

Mouat, Esq. F. J.	Sutherland, Esq. J. C. C.
Muir, Esq. J.	Seton, Hon'ble Sir H.
Mill, Esq. J. B.	Strong, Esq. F. P.
Macleod, Esq. D. F.	Storm, Esq. W.
Middleton, Esq. J.	Stirling, Esq. E. H.
Macleod, Capt. W.	Spilsbury, Esq. G. G.
Nicolls, Gen. Sir J.	Sutchurn Ghosal, Bahadoor, Rajah
Ommannay, Esq. M. C.	St. Pourçain, Esq. J.
Ouseley, Lieut. Col. J. R.	Strachey, Lieut. H.
O'Shaughnessy, Esq. W. B.	Sprenger, Esq. A.
Peel, Hon'ble Sir L.	Stephenson, Esq. R. M.
Pratt, Rev. J. H.	Shortrede, Capt. R.
Prinsep, Esq. C. R.	Stephen, Capt. J. G.
Prosonoo, Coomar Tagore, Baboo	Syud Keramut Ullee, Associate Member
Phayre, Lieut. A.	Thomason, Hon'ble J.
Piddington, Esq. H. Associate Member.	Tickell, Lieut. S. R.
Robison, Esq. C. K.	Taylor, Lieut. Col. T. M.
Ryan, Esq. E. B.	Torrens, Esq. H.
Ravenshaw, Esq. E. C.	Trevor, Esq. C. B.
Rawlinson, Major H. C.	Torrens, Esq. J. S.
Rustomjee Cowasjee, Esq.	Winchester, Rev. W.
Ramanath Tagore, Baboo	Walker, Esq. H.
Ramcomul Sen, Baboo	Wade, Lieut. Col. Sir C. M.
Ramgopaul Ghose, Baboo	Willis, Esq. J.
Radakanth Deb Bahadoor, Rajah	Withers, Rev. Principal G. U.
Sleeman, Lieut. Col. W. H.	Wallis, Rev. A.
Stacy, Lieut. Col. L. R.	Wilcox, Major R.
Sanders, Lieut. Col. E.	White, Major M. G.
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Proceedings of the Asiatic Society — FEBRUARY, 1844.

(*Tuesday, the 6th February, 1844.*)

The Monthly Meeting of the Society was held on Tuesday the 6th of February, at the usual hour. The Honourable The President in the chair.

The Meeting was made special, to afford the Members an opportunity of expressing their sentiments on the departure of their old and talented associate B. H. Hodgson, Esq. late Resident at Kathmandoo, who was to embark that evening on board the *Earl of Hardwicke*.

Before commencing the business of the evening, the Honourable the President rose, and in the most feeling and impressive manner, addressed the Members to the following effect :—

"The daily Papers have informed you of the object of this Meeting, but it may be necessary to explain why it has been made special, particularly as to-morrow is the usual day, and it has been determined to adhere to that day except under very peculiar circumstances. On the present occasion, the circumstances are such as to make me feel confident that you will all concur in the propriety of what has been done. Mr. Hodgson sails to-morrow, and I am sure that there is not a Member here present who would not have regretted the loss of the only opportunity we shall ever have of seeing him in this place, and of testifying, as far as we are able, how highly we are sensible of the credit which his labours and researches have reflected on the Society. I am aware, that in alluding to them, I am causing to the distinguished individual of whom I am speaking more pain than pleasure, but I hope he will forgive me, for I feel that you would all consider me as ill discharging the duties of the situation in which I have the honor to be placed, were I to allow such an occasion as this to pass without referring to those labours and those researches in terms of suitable acknowledgement.

"I confess, however, that I am quite unable to speak of them as they ought to be spoken of, but of their variety and extent, you may yourselves be able to form some judgment, when you hear that Mr. Hodgson's contributions to the Transactions and Journal of this Society alone, according to a paper which I hold in my hand, amount to eighty-nine distinct papers.* This, however, is not the extent of the work accomplished by him. He has largely contributed to other scientific bodies as much by the benefit of his correspondence as by his direct contributions, and in addition

* See list in the following page.

to all the mass of research, and all the novelty of information of which evidence is before us in his detached papers, we possess the most valuable of all his works, his book on the literature and religion of the Boodhists, a work the most complete extant upon a subject till lately but little understood, and of the highest importance to the Philologist and the Historian. But this is not all; while engaged in the most difficult and important official avocations he has found time also to enrich our knowledge of Zoology by new observations on known animals, and a series of discoveries of novel ones. But it is unnecessary for me to dilate on these subjects, as all the particulars will be far better explained in the course of the evening by the other Officers of the Society. I will only further observe, that the high reputation which Mr. Hodgson has conferred on the Society, is not merely a local and an Indian one. His name, widely spread with his discoveries among the Scientific Societies of Europe, has carried with it corresponding credit to the Body, as a Member of which he had laboured, and which ought therefore to testify their acknowledgments in a mode creditable alike to their distinguished associate and to themselves.

The Hon'ble the President then proposed.

"That as a testimony of the high sense entertained by this Society of Mr. Hodgson's scientific and literary labours, and also as a mark of personal regard, he be requested to sit to some first-rate Artist for his bust, to be placed in its Public Meeting Room."

This motion was seconded by H. Torrens, Esq. V. P. and Secretary to the Society, and carried unanimously,

B. H. HODGSON, ESQ.

Contributions to Transactions and Journal, referred to by the Honourable the President.

1828, Account of Manufacture of Nepal Paper,	1833, On a New species of Buceros,
1829, On a new species of Buceros,	Description of the Aquila Nepalensis,
Antilope Hodgsonii. Notice of,	Description of the Cricetus Nipalensis,
1830, Antilope Hodgsonii. On the,	Migration of the Natatores and Grallatores in Nepal,
1831, On the Antilope,	On the Wild Goat and Wild Sheep in Nepal,
On a species of Felis,	Description of the Ratwa Deer,
On Scolopacidae,	Description of the Buceros Homrai,
On Musk Deer,	Description of the Wild Dog of the Himalaya,
On the Cervus Jarai,	Nipal Zoology,
On the Ratwa Deer,	On the Nepal Military Tribes,
On the Jarai Goat,	1834, On the Chiru Antelope,
On the Migration of Birds,	On the Newars,
On the Chiru,	On Buddhist Inscriptions,
On the Mammalia of Nepal,	On Buddhism,
1832, Route from Katmandu to Gasedo,	On Ancient Inscriptions,
Account of Manufacture of Nepal Paper,	1835, Visit to Simroun,
Further illustrations of Antilope Hodgsonii,	On Tibetan Inscriptions,
Notes on the Cervus Jarai,	
Remarks on the Buceros,	

- On Sarnath Inscription,
Zoology of Nepal,
On Bearded Vulture,
On red-billed Erolis,
On Thar and Ghoral Antelopes of Nepal,
On Wild Goat of Nepal,
On Wild Sheep of Nepal,
On specific characters of *Cervus*,
On Nepal Mustela,
1836, On Falconidæ,
Synopsis of Mammals,
On Nepal Ornithology,
On Wild Goat,
On Zoological Nomenclature,
Description of *Columba*,
Sketch of Buddiham,
On Ursitaxus,
On New Incessores,
On Charadriadæ,
On Falconidæ,
On Yunxinae,
On Cerithiadæ,
On Hirundinidæ,
1837, On Indian Thrushes,
On Woodpeckers,
On Incessores,
On new genera of Sylviadæ,
On new genera of Raptoreæ,
On new Scolopacideæ,
On Gauri Gau,
On new genera of Plantigrades,
On Language of Buddhist Scriptures,
On the Bibos, or Gauri Gau,
1838, On a Pheasant from Tibet,
1839, On Cuculus,
1840, Hare of Gangetic Provinces and of the
Sub-Himalayas; with a slight notice of
a strictly Himalayan species,
- On the common Monkey ; with remarks on
genera *Semnopithecus* et *Macacus*, three
new species.
Nayakote. A cursory notice of,
1841, Note on the *Cervus Elaphus* of the Sal
Forest of Nepal,
On the Genera of the Bovinae,
Glaucopinæ, or Rassorial Crows inhabiting
the Northern regions of Nepal,
Conostoma Æmodeus Notice of a new form,
Lagomys inhabiting Nepal, with plate
of a new species,
Mammals of Nepal. Classified Catalogue
of to the end of 1841, first printed 1839,
Notice of Marmot of the Himalaya and of
Tibet,
New organ in the Genus *Moschus*,
Classical Terminology of Natural History,
1842, Notice of the Mammals of Tibet, with
descriptions and plates of some new
species,
1843, Description of a new genus of Falconidæ,
Catalogue of Nepalese Birds, presented to
the Asiatic Society, duly named and
classified by the Donor,
Translation of the Naipala Devata Kalya-
na, with Notes,
Notice of two Marmots, inhabiting res-
pectively the plains of Tibet and the
Himalayan Slopes near to the snow, and
also of a *Rhinolophus* of the central
region of Nepal,
Additions to the Catalogue of Nepal Birds,
On a new species of *Cervus*—*Cervus Di-*
morphæ,

Books.

- Illustrations of the Literature and Re-
ligion of the Buddhists,

The following Honorary Member proposed at the last Meeting by the Hon'ble the President, and seconded by the Secretary, was unanimously elected.

H. R. H. JOHN, PRINCE OF SAXONY.

New Member proposed.

Lieut. Hopkinson, B. N. I. Assistant to the Commissioner of Arracan. Proposed by H. Torrens, Esq., seconded by Lieut. Phayre.

Read the following list of Books presented and purchased during the month of January :—

- Books received for the Meeting of the Asiatic Society, on the 6th February, 1844.*
Voyage dans L'Inde, par St. H. Theroude. Paris, 1843, 8vo.—Presented by the Author.
Meteorological Register kept at the Surveyor General's Office. Calcutta, for the month of Decem-
ber, 1843.—From Government.

The Calcutta Christian Observer, February 1844.—Presented by the Editor.
 The Oriental Christian Spectator, January 1844.—Presented by the Editor.
 Proceedings of the Geological Society of London, vol. 4, No. 94.—Presented by the Society.
 Journal of the Agricultural and Horticultural Society of India, No. 10, 1843, vol. 2d.—Presented
 by the Society.
 The Calcutta Literary Gleaner, No. 10, vol. 2d.—Presented by the Editor.
 The Annals and Magazine of Natural History No. 77, 78, 79 and 80.—Purchased.
 The London, Edinburgh, and Dublin Philosophical Magazine and Journal of Science, 3d series,
 No. 153, November 1843.—By the Editor.
 A Catalogue of a valuable collection of books on Natural History, arranged in classes according
 to the Linnaean system by W. Wood.—By the Author.
 Journal des Savants, Septembre 1843.—Purchased.
 The Zoology of the Voyage of H. M. S. Sulphur during the years 1836 & 7.—Purchased.
 Illustrations of the Zoology of South Africa by A. Smith, No. 18, July, No. 19, November.
 Russee Buhur, [Persian,] presented to the Society by Nawab Oomdat-ool-Mook, Bahadoor.
 Russee-ool-Issahee, [Hindoostanee,]—Presented to the Society by Nawab Ooomdat-ool-Mook,
 Bahadoor.

Read the following letter from J. Muir, Esq., C. S:—

To the Secretary to the Asiatic Society of Bengal.

SIR,—I beg to state for the information of the Committee of the Asiatic Society of Bengal, that I have returned to India, and that I have instructed my Agents, Messrs. Colville, Gilmore and Co. to recommence the payment of my Annual Subscriptions as a Member of the Asiatic Society.

I should feel obliged by your acquainting me, whether any progress has been made in the printing of the *Sarira Vidyā*, a Sanskrit Translation of Hooper's Anatomist's *Vade-Mecum*, towards the publication of which I subscribed 1000 Rupees some years ago.

I have the honor to be, Sir,

Your most obedient servant,

Spence's Hotel, Calcutta, 29th January, 1844.

J. MUIR,
M. As. Soc. B.

*

The Secretary stated, that upon enquiry he had learnt from Dr. O'Shaughnessy that 500 Rs. of the money subscribed by Mr. Muir had unfortunately been lost having been remitted to Europe to cover the cost of wood cuts from Quain's Anatomy through the agency of Stocqueler and Co., whose bill was dishonored, and the amount irrecoverable. Mr. Muir had been assured, that the printing of the *Sarira Vidyā* would be early brought under the consideration of the Society.

Read the following letters accompanying a small box of shells, addressed to James Prinsep, Esq., or Acting Secretary of the Society.*

MUCH HONoured SIR,—You receive therewith a little box with shells destined for the Cabin of the Asiatic Society. The enclosed letter shall mention you the further, should you be induced to make to me a remittance. Capt. Metier's ship *Auguste et Meldeve*, by which you receive this box shall without doubt take care of your sending; otherwise you can make to me Sundries over London or Hamburg, and address in the former place. Your boxes to Mr. Tost, care of the

* These letters are, it will be seen, printed.

ship's broker, *Cartemdyk*; but inform this gentleman by a letter, that the box is destined for me, and that he might account to me for the expences.

With the greatest respect,

Your most obedient servant,

G. VONDEM BUSCH, M. D.

Member of the Board of Health, &c.

Bremen, 20th Feb. 1844.

MUCH HONOURED SIR,—It is already a long time that I received from you, care of Dr. Cantor, some shells from Bengal, for which I was very thankful to you. Sometime after the receipt of these shells, I sent a little collection of shells to Professor Wilson, to London, and I solicited him to take care, that it might come to your hands. Never I have heard if this sending has reached you, although I have inquired after it by Professor Wilson. Now as the rare occasion offers to myself that a ship sails from Bremen to Calcutta, I profit of it, and take the liberty to send to you some shells for the Cabinet of the Asiatic Society. I have selected principally the shells of our country, as I think that these shall be rare in Asia, and have adjoined some of American shells. If this sending should be agreeable to the Society, I would be very enjoyed, and shall continue to communicate to the Society from time to time some more shells. It would be very agreeable for me, if you would mention me, in what respect I can otherwise be useful to the body, and I give you the promise, that I shall do my possible to fulfil the desires of that learned Society. Now, my dear Sir, I solicit you to send to me once some shells of your interesting country. Besides the bed shells from the genus *Helix*, *Bulinus*, *Achetina* and *Cyclotoma*, I wish also to receive of the *Breates* and Univalves of fresh waters, and particularly agreeable for me would be specimens of the Genus *Melania*. I purpose merely, if I should be supported by my friends and correspondents in other countries, in procuring specimens of the said genus, to prepare a Monography of it. To your former sending I have received some very interesting and a large unknown species of *Melania*, which I have described already in a conchological work of our country. I wish now to multiply the specimens of the said genus, and to make them known to the naturalists. I doubt not, that many new shall be found in the waters of Bengal, and every new contribution shall be of value for me. You have sended to me also very fine but broken specimen of a new genus, similar to *Paludina*, also a specimen similar to *Cyclotoma*, which are very fine and interesting. Could you send me of these some more I should be very glad. Specimens of this shall also be welcome. One of the *Helices* I have received I call *Podiceps*, and on the other *Hel. Bensoni*, as the descriptions and name of Mr. Benson are not known in Germany.

If, dear Sir, I can be useful to you or the Society in sending minerals or other natural products, I shall fulfill your desires with pleasure, and I solicit only to give me up a secure way that I can send you such objects.

In the hope that my sending shall be agreeable to the Society, and that you shall fulfill my desires.

I have the honor to be,

Your obedient servant,

G. VONDEM BUSCH, M. D.

Member of the Board of Health, and of various Scientific Societies.

Bremen, 20th Feb. 1843.

Read the following letter, accompanying the valuable paper to which it refers, which was ordered for publication in the Journal:—

No. 60 of 1844.

From P. MELVILLE, Esq. Under-Secretary to the Government of India, to H. TORRENS, Esq.
Secretary to the Asiatic Society, Fort William, the 27th January 1844.

Foreign Department.

SIR,—I am directed by his Honor the President in Council to forward to you, for such notice as the Society may consider it to merit, the accompanying Vocabulary of the Hindooee dialect of Bundelcund, by Major R. Leech, C. B.

2nd. You will have the goodness to return the original document when no longer required.

I have the honor to be, Sir,

Your most obedient servant,

Fort William, the 27th January, 1844.

P. MELVILLE,

Under Secretary to Government of India.

A continuation of Lieut. Baird Smith's Researches on Indian Earthquakes, was presented from that gentleman, and will speedily be published.

Read the following extract of a letter to the Secretary from Capt. Cunningham :—

Camp via Ambala, 20th January 1844.

"Can you scholars not come to any conclusion about the connection of the present and former religions of the East, as of the Brahmins, the Magi, and the Lamas? — How seems common to all under one modification or another.—The Tibetan "Doongten" or "Doongtung" is a place of the dead like the Guebre "Dokmeh"; and "Lat," a pillar of flame, and also an obelisk in the vernacular of India, is an object of worship in either sense in this country.—"Lat" was equally adored in Arabia, while words resembling it imply divinity or power, or superiority in Tibet and in other places."

Read the following letter from Dr. McCallum, accompanying the two Works to which it refers :—

To the Secretary to the Asiatic Society of Literature and Science, Calcutta.

Sir,—By desire of Nawab Oomdut-ool-Mook Bahadoor, I have this day dispatched to your address, two Hindostanee Books translated from the English—one called Ruffee-ool-Bussur, and the other Ruffee-ool-Issahac, and beg you will kindly present them to the Society. The Ruffee-ool-Busser is a work not merely a translation, but some additions have been made to it from the Nawab's own observations.

I beg to remain, Sir,

Your most obedient servant,

D. McCALLUM,

Hyderabad, 2d Jan. 1844.

Sub-Ass't. Surgeon, N. S.

Read the following letter and note of charges from Mr. Blyth, Curator in the Zoological Department :—

MY DEAR SIR,—I did not think to remind you this morning to send me the letters from P. Wilson and Capt. Cautley, as I wish to forward them to Hushnagie as soon as I can.

Herewith I send the memoranda I promised you of the expenses of the Zoological department of the Museum for the year 1843, exclusive of salaries. The expenses of last month have been unusually heavy, exceeding Co's. Rs. 200; the cost of spirits required being one of the heaviest items. It is only from October last that I have commenced regularly collecting fishes, a branch of zoology that involves the purchase of bottles and of spirit. A considerable number of sundry specimens have been forwarded by me to the Honorable Company's Museum as well as to various other institutions, the collecting and preparation of which enhances the immediate outlay of the Society, although, in the long run, I trust that we shall not be losers by this liberality. From the Honorable Company's Museum, however, to which the greatest number have been sent, and where a host of others are expected from me, I do not expect to receive much by way of exchange. You will also bear in mind that the more successful my exertions are in collecting desirable specimens, the cost of these will always be proportionate or, in the aggregate, about commensurate with that success; and I have certainly obtained many capital things lately. I may also further remind you, that the assistance liberally rendered by Government of 50 Rupees monthly for taxidermist's expenses, was allowed

previously to my taking charge of the Museum, since which time the expenses of our zoological department have of necessity, been so much increased. I wish you to urge these matters to the President at our next meeting,—kindly send Wilson's and Cautley's notes, and am

Yours truly,

February 6, 1844.

E. BLYTH.

Memorandum of expenses incurred in the purchase of specimens, and of sundries required for the preparation of them, including the cost of shikarees and of boys to assist the taxidermists, also of correspondents, &c. connected with the Zoological Department of the Museum for the year 1843.

January,	...	Co.'s Rs.	12	15	0
February,	...	81	10	9	
March,	...	127	12	0	
April, ...	...	151	4	3	
May, ...	...	122	8	0	
June, ...	...	162	1	0	
July, ...	...	152	5	3	
August,	...	103	14	0	
September,	...	99	12	9	
October,	...	79	10	3	
November,	...	130	7	9	
December,	160	11	0	
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12) 1,495 0 0					
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Average, 124 9 4					
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Add to this the cost of the new cases for the Mammalia, also two new cases in the Bird Room, (holding Parrots, &c.,) and the new Insect cases.

Read the following extract from a private note to the Secretary :—

"I beg to call your attention to the existence of a volume in the Library of the College of Fort William, which I think might more properly be transferred to that of the Asiatic Society. The volume I allude to, is the manuscript original of the translation of the Dharma Shastru of Munoo, by Sir W. Jones; and a gentleman who was with me at the time that my eye fell upon this volume assured me, that he could safely pronounce it to have been written by Sir William himself; if such is the case, it certainly would be deposited with more propriety in the Library of a Society established by that distinguished individual himself, than in that of an establishment in no way connected with him. I have reason to believe, that there are other manuscripts connected with Oriental literature which ought to have been transferred to the Library of the Asiatic Society, which are still buried in the Library of the College of Fort William."

The Secretary was requested to make this the subject of a special representation to Government.

REPORT OF THE CURATOR MUSEUM OF ECONOMIC GEOLOGY AND GEOLOGICAL AND
MINERALOGICAL DEPARTMENTS FOR JANUARY, 1844.

Geological and Mineralogical.—Mr. Heately has obliged us with some minerals from Jubbulpore, amongst which are some quartz geodes finely coated with green earth, a specimen of crystallized mica, and two of zeolites, which will be additions to our cabinet as varieties.

Mr. J. Dodd of the Mint, offers for sale a collection of 200 specimens of the fossils of the older Fossiliferous Rocks, which he procured recently from Berlin for his own researches in the neighbourhood of Agra, but does not now require. I have examined these, both with reference to the specimens themselves and to the prices usually charged by dealers at home, and should strongly recommend their purchase, as they are really much wanted for reference. We have nothing of the kind in the Museum, and the price asked by Mr. Dodd, 95 Rs., is not more than the cost and charges of such a series from respectable dealers.

To the Secretary to the Asiatic Society.

DEAR SIR.—Last year when in the Upper Provinces, I ordered from Berlin a collection of Fossils, found in the lower Fossiliferous Rocks, for the purpose of comparison with any I might obtain from the neighbourhood of Agra. The collection has just arrived, and as I have now no opportunity for applying it to the object I intended, I beg leave to offer it to the Asiatic Society for the sum it has cost me. The collection comprises 200 specimens, and the charge is 95 Rupees. I shall be very happy to send the specimens to the Society's Rooms, if you think it will be disposed to take them off my hands.

Yours obediently,

December 23, 1843.

JAS. DODD.

I may notice here, for it belongs specially to the department, the reception of a continuation of Lieut. Baird Smith's paper on Earthquakes for the Journal, and it is to be hoped, that from the wide circulation which these valuable papers will obtain, we shall be able to draw attention to these singular and often awful phenomena, with which, no doubt, so many of the changes of our globe are connected.

Museum of Economic Geology.—Capt. Hannay, Assam L. I., has contributed nine specimens of clays from the banks of the Dikho River in that country.

In searching through our Cabinets for other matters, I have met with a specimen of the beautiful green Jade, (axc-stone,) of New Zealand, to which I referred at the meeting of October. It is fortunately also marked with the name and locality, "Bigge, Sudhiya," so we know that it is from Assam, and though only a pebble from the river, it is to be hoped we may find the vein or mass of it. Our zealous member, Captain Hannay, promises me to use his best endeavours to procure us specimens, as also of some very fine precious serpentine, which he says is to be obtained in very large blocks there. If these stones could reach Calcutta cheaply, they would be much prized, and probably valuable as exports to China, as the New Zealand Jade already is.

Mr. Hodgson, late Resident at Kathmandoo, has obliged us with a bottle of the water of the Gossainthan spring at 24,500 feet of elevation in the Himalayas. Upon a hasty examination I find it is of a light inky colour, and highly fetid smell, but no peculiarly disagreeable taste beyond that of the sulphuretted hydrogen, and that it contains sulphuretted hydrogen in considerable quantity, and traces of carbonic acid. A black flakey deposit is forming in it, probably bitumen and sulphur?.

It gives no trace of iron or lime, muriates, or sulphates, and is thus probably a mere solution of bituminous and sulphureous matters. It is evidently decomposing, and this with its entire inaccessibility to us, render it not worth while to analyze it minutely, but I shall not fail to examine the deposit.

Mr. Greenlaw, Secretary to the Superintendent of Marine, has obliged us with a few specimens of the copper ore, and another of the argentiferous lead ore of Adelaide, Australia.

Proceedings of the Asiatic Society.—MARCH, 1844.

(*Wednesday Evening, the 6th March, 1844*)

The usual Monthly Meeting was held on Wednesday evening, the 6th instant, at 8½ p. m. The Honorable Sir H. W. Seton in the chair.

Lieutenant Hopkinson, B. N. I., Junior Assistant to the Commissioner of Arracan, was duly elected a Member of the Society, and the usual notification was ordered to be made to him.

The following new Members were proposed; viz.

B. Colvin, Esq., B. C. S., proposed by E. C. Ravenshaw, Esq. C. S., and seconded by the Secretary.

W. Quintin, Esq. C. S., proposed by E. C. Ravenshaw, Esq. C. S., and seconded by the Sub-Secretary.

Read the following letter from Lady Rodd, accompanying the *Eloge* to which it refers:—

To the President and Members of the Asiatic Society, Calcutta.

Lady Rodd has had the pleasure of receiving a very gratifying letter from the President and Members of the Asiatic Society; in consequence of the flattering manner in which the Medallion of her revered father has been received, her Ladyship begs to offer a copy of the *Eloge* lately passed on Major Rennell by the Institute at Paris, who were so well able to appreciate the value of that celebrated man. Lady Rodd wishes to offer her sincere thanks to the President and Members of the Asiatic Society for their kindness in placing the Medallion in so honorable a position.

Wimpole Street, 27th December, 1843.

Read the following letter from B. H. Hodgson, Esq., late Resident at Kathmandoo:—

H. TORRENS, Esq. Vice-President, Asiatic Society.

On board the Hardwicke, Saugor, Feb. 9, 1844.

SIR,—I request you will be pleased to convey to the President and Members of his Society my heartfelt regret that, never having before addressed a public body,

and being wholly unprepared for the honour and kindness lavished on me at the special meeting of Tuesday last, I found myself quite unable to do justice to those sentiments of pride and pleasure with which the Hon'ble the President's proposal, and the cordial reception it met with from the meeting, inspired me.

I cannot now hope to recover the lost opportunity of expressing my sentiments, but lest I should possibly seem wanting in a due sense of the distinction proposed to be conferred upon me, I beg leave to say, that every circumstance of the meeting of Tuesday last, is engraved upon my heart; that I contemplate the idea of my bust being placed in the Society's Hall as a proof of the regard and esteem of those who have known me so long, with inexpressible delight; and that so long as I live, the welfare of the Society will ever be the objects of my warmest wishes, and so far as may be, of my best endeavours.

I have the honor to be, Sir,

Your most obedient servant,

B. H. HODGSON,

Member, Asiatic Society.

Read the following list of Books presented and purchased during the last month:—

Books received for the Meeting of the Asiatic Society, on the 1st of March, 1841.

Journal of the Bombay Branch Royal Asiatic Society, No. VI. October, 1843.—Presented by the Society.

Meteorological Register kept at the Surveyor General's Office, Calcutta, for the month of January, 1844.—From Government.

Naturalist's Library, Ichthyology, Vol. VI. British Fishes.—Purchased.

Naturalist's Library, Ornithology, Vol. XIV. British Birds.—Ditto.

The Calcutta Christian Observer, March, 1844.—Presented by the Editors.

The Annals and Magazine of Natural History, No. 81, January 1844.—Purchased.

Read the following copy of a letter to be dispatched to Messrs. W. and H. Allen by the next Steamer.

Messrs. Allen and Co.—Special.

DEAR SIRS,—I am charged to press upon your immediate attention the following commission.

A bust of Mr. Brian Haughton Hodgson, B. C. S., having been voted by the Asiatic Society of Bengal, and that gentleman having left this country in the ship *Hardwicke* on the 7th instant, you are requested to place yourselves on receipt of this, in communication with Mr. Baily, Mr. Weekes, or Mr. Westmacott, the sculptors, or failing them, with the next eminent artist in sculpture, for the purpose of engaging his services for the work above noted. Having come to an understanding with the artist, I am charged by the Honorable the President and Members to request, that you will wait upon Mr. Hodgson on his arrival in England, (learning his address at Messrs. Coutts and Co.) and learn his wishes as to sittings for the bust.

You are requested to draw on the Society for advances and charges connected with the work, and the Honorable the President directs me to express his strong personal desire that you will gratify the Society by giving this matter your best attention.—Cost of the bust understood to be *not over* Guineas 150.

I am, &c.

Calcutta, 7th March, 1844.

H. TORRENS,
Vice President and Secretary Asiatic Society of Bengal.

Read the following letter from the Officiating Secretary to the Government of India, sanctioning payment for the copies of the reprint of Lieutenant (now Major) Leech's Beloochy and Brahooi Vocabulary and the over-copies of Capt. Eastwick's Scindee Vocabulary.

No. 131 of 1844.

From T. R. DAVIDSON, Esq. Officiating Secretary to the Government of India, to H. TORRENS, Esq. Vice President and Secretary to the Asiatic Society.

SIR,—In reply to your letter dated 26th ultimo, I am directed to inform you, that His Honor the President in Council has been pleased to pass the Foreign Department two bills submitted by Mr. Ridsdale of Bishop's College Press, amounting in the aggregate to Company's Rupees 124, for printing on account of Government, 150 copies of Lieutenant Eastwick's Vocabulary of the Scindee Language, and 150 copies of Lieutenant Leech's Grammar of the Brahoozy, Beloochee and Punjabee Languages. The necessary instructions will be issued through the Financial Department for the payment of that sum from the General Treasury to Mr. Ridsdale's receipt.

T. R. DAVIDSON,

Fort William, 24th Feb. 1844.

Offy. Secy. to the Govt. of India.

Read the following letter from the Secretary to the Royal Bombay Branch of the Asiatic Society :—

To the Secretary of the Asiatic Society of Bengal, Calcutta.

SIR,—With reference to my letter of the 7th September last, and by desire of the Bombay Branch of the Royal Asiatic Society, I have the honor to enclose bill of lading of a box shipped on board the *Framjee Cowasjee*, Captain Edwards, for Calcutta, containing copy of the Izashni and Visparad, of each of which 25 copies only have been lithographed at the expense of the Society, which you will be so good as to present to the Asiatic Society of Bengal. The box also contains 72 Geological specimens, some of which are of considerable interest.

The enclosed separate list will be of use in assisting the Curators in the arrangement of such of these specimens as may be found to deserve a place in the Museum, the fossils having been named with considerable care.

Another box will be prepared in a short time.

I have the honor to be, Sir,

Your most obedient servant,

JOHN G. MALCOLMSON,

Bombay, Asiatic Society's Rooms, 9th Feb. 1844. Secretary, B. B. R. A. S.

Read the following letter from Moulmein; the book to which it refers was not obtained in time for the Meeting, having been sent to the Agricultural Society by mistake.

To the Librarian of the Asiatic Society, Calcutta.

SIR,—I do myself the honor of enclosing an order for a copy of the Maulmain Almanac and Directory for 1844, as also for a Plan of Maulmain, which I have been induced to compile in consequence of there being no work of the kind here, and the advantage it would be likely to confer upon the community, although a task of this nature is altogether out of my line of life.

Please accept of the work for the use of the Members of the Society.

I have sent it along with a few other copies to the care of Mr. Black, upon whom the order is.

I am, yours most obediently,
GEO. EVERE BARR.

P. S.—A few copies of the Work and Plan are sent for sale to Messrs. Ostell and Lepage.

Read the following letter from Dewan Horemohun Sen, addressed to the Sub-Secretary:—

To H. PIDDINGTON, Esq. &c. &c. &c.

MY DEAR SIR,—Here is a work compiled by Baboo Goorooprushad Roy, a very respectable gentleman and scholar. It is a Sanscrit and Bengalee Dictionary, or more properly speaking, an Encyclopedia, which has cost the author a great deal of labour and time, and much talent is, no doubt, displayed in it. The opinion passed upon this work by the learned Fundits here is highly favourable, as they consider it not only a very talented production, but particularly useful to persons learning Sanscrit and pure Shadho Bhasa Bengalee. I give him this note to you at his particular request; his object being to ask the favour of the Society's helping him, if convenient, to print and publish it for the benefit of those who apply themselves to the study of Sanscrit. He thinks that you can obtain for him some subscribers in Europe, where Sanscrit is held in estimation, such as France, Germany and England, &c. If you could therefore give him a helping hand, you would oblige,

Yours very sincerely,

HOREMOHUN SEN.

Bank of Bengal, the 14th February, 1844.

The specimen of the work accompanying the letter was thought highly satisfactory, and the Secretary was requested to make further enquiry as to the cost of printing, &c.

Read the following extract of a letter from V. Tregear, Esq., accompanying a Meteorological Table for 1843, kept at Pussewa near Jounpore.

MY DEAR SIR,—I have the pleasure to send you a Meteorological Register kept at Pussewa, (12 miles east of Jounpore,) during the year 1843, which you may think worth putting in the Journal.

Jounpore, 14th February, 1844.

VINCENT TREGEAR.

The Table was referred to the Editors of the Journal.

The Secretary brought to the notice of the Meeting two books; viz.

British Moths and British Butterflies, by Westwood and Humphries, of which, at the request of the Zoological Curator, he recommended the purchase, which was sanctioned accordingly.

Read the following letter from the Curator Mineralogical and Geological Department:—

H. TORRENS, Esq. Vice President and Secretary, Asiatic Society.

SIR,—I beg to represent to you the urgent want of two more cases for our Mineralogical, and two more for our Geological collections.

You have yourself witnessed the crowded state of our valuable Mineralogical Cabinet, and I may add, that I find it next to impossible to proceed with the heavy task of arrangement without the room in which to arrange. I have large stores to add yet to both the Mineralogical and Comparative Geological Cabinets, for which the four cases now applied for will be but barely sufficient, so that even with them, the utmost management will be required to do justice to our treasures.

I estimate the expense at about 60 Rs. each case, probably something below it.

H. PIDDINGTON,

*Curator Museum Economic Geology and of
Museum, 6th March, 1844. Mineralogical and Geological Departments.*

The purchase of the cases was sanctioned by the Meeting.

Read the following—

REPORT OF THE CURATOR MUSEUM OF ECONOMIC GEOLOGY AND GEOLOGICAL AND
MINERALOGICAL DEPARTMENTS.

We have but little to report upon this month, having had few contributions, and my own time being occupied with current arrangements, and with my report on the Che-duba specimens, which requiring many investigations, is not yet finished.

The Society will however hear with pleasure, the following letters from Government:—

No. 91.

From T. R. DAVIDSON, Esq. Offg. Secretary to the Government of India, to
H. TORRENS, Esq., Secretary to the Asiatic Society, dated the 27th Jan. 1844.

SIR,—With reference to the application of the Asiatic Society, bearing date the Home Department. 1st of July 1842, I am directed by the Honorable the President in Council to transmit to you the annexed copy, Paragraph 2, of a Despatch from

the Honorable the Court of Directors, No. 17 of 1843, dated the 1st November, together with Captain Herbert's Geological Map of the Mountain Provinces between the Sutlej and Kalee therein alluded to.

I am, Sir,
Your obedient servant,
T. R. DAVIDSON,
Offy. Secy. to the Govt. of India.

Council Chamber, the 27th Jan. 1844.

Extract from a Despatch from the Hon'ble the Court of Directors in the Public Department, dated the 1st November, 1842. No. 17.

Answer to Letter, dated 20th July, No. 32 of 1842.

2. We enclose as a number in the packet, a copy of Captain Herbert's Geological Map of the Mountain Provinces between the Sutlej and Kalee; but have not thought it necessary to incur the expense of procuring copies of the Views, which are large colored drawings of Scenery, and of no value in a scientific point of view.

(True Extract,) T. R. DAVIDSON,

Offy. Secy. to the Govt. of India.

I have now the gratification of exhibiting the Geological Map to which it refers, and of congratulating the Society upon its having been able, through the kind attention of Government and the Honorable the Court of Directors, to render to the memory of one of their most zealous Members, and most earnest and laborious Indian men of science, Captain Herbert, full, though tardy justice; and in doing this also, it may claim at the same time to have rendered a most essential service to the cause of geological science, in giving to the world a connected Geological Map of this part of our great mountain barrier; for however deficient it necessarily is in details, and however much there may remain to be filled up, we have still here such a leading sketch of its main features by a scientific explorer, as will be invaluable to future observers; and I cannot better illustrate this opinion, than by requesting the attention of the Meeting to our two Geological Maps of England. The one but a little further improved than that of William Smith, the father of English Geology, after twenty years of assiduous and unassisted labour; and the other, Mr. Greenough's, the fruits of the combined knowledge and labours of all the geologists of England in twenty years more. It will be seen from these two examples how valuable, and in fact how indispensable, these preliminary sketches, like the first chalk or charcoal lines of the painter, are to the production of a finished work; and finally, we shall now, it is to be hoped, completely rescue Captain Herbert's labours from oblivion, (and even from misrepresentation,) and render justice to the liberality of the Government of India of that period in undertaking this great and most useful work.

Museum of Economic Geology.—We have received in this department, but without any letter, three sets of two Maps each, of the country through which the proposed

Rajmahal Canal is to pass, with the supposed limits of the Gangetic Alluvium. I do not know if any Geological Report was made on this interesting tract of country, but shall not fail to enquire and to obtain its publication if possible.*

Mr. Black has obliged us with a Report on, and impressions from, the Lithographic Stones sent down by Captain Shortrede.

H. PIDDINGTON, Esq.

DEAR SIR,—In reply to your note of this morning I beg to inform you, that Mr. Blechynden has received the copy of the Moultain Almanac intended for the Asiatic Society's Rooms; and with reference to the Stones, I have pleasure in forwarding two proofs taken off from impressions on each, but regret much I cannot give you so favorable an account of them as some of the former ones, as I find Nos. 1, 2, 3, 4, 5, 6 and 7 too soft, and No. 8 too hard, more resembling marble. This last is one of the two you left with me, before those you left in the box. The little blue piece is by far too soft.

Asiatic Lithographic Press,
No. 3, Hare Street, 4th March, 1844.

THOS. BLACK.

It would thus appear, that none of these are equal to the former fine specimen, as might well occur when a number are taken at random from a heap of fragments quarried for building purposes; for in the German quarries also it is only from certain beds near Munich that the fine Stones are procured, and it is to this that, in part, their high price is owing. This matter however, is well worthy of a special recommendation to Government from the Society, since we are certain that a really good Stone exists, and have so near the spot an active, intelligent and zealous co-operator, like Captain Shortrede.

I have added to our collections specimens of the common Corundum Stone of the Bazar, with the powder of which all the cutting, grinding and polishing work of precious Stones is performed; even the Diamond is averred to be cut and polished by it, and it seems certain, that the use of Diamond powder is not known to the natives; or if known, that its expense prevents its adoption, or that the Indian lapidary finds his own process practically the best.

I find upon trial that the Corundum, would certainly cut every thing below the Sapphire in hardness, and no doubt polish the Sapphire, and I believe that if better known in Europe, it would be found of high value in the arts, and in many instances, (I speak here upon very competent authority,) reduce the prices of many very expensive processes, such as that of grinding hard steel pivots and plates, gems for lenses and the like, for which only Diamond powder can now be used, and the expense of this is often completely a prohibition on its employment, or adds enormously to the cost of the article. I have placed upon the table from our own collection nine specimens of the Stone, beginning with the Emery of Naxos, and ending with the crystallised rose Corundum of Ceylon.

* I have since learned from Colonel Forbes that no Geologist was attached to the Survey. Boring were made, and wells sunk along the line, and a series of specimens also collected from the adjacent rocks, but it is not known what became of them.'

I have recommended a gentleman in this line of business, who left Calcutta a short time ago on the *Hindostan*, to take home a quantity of these stones for trial, and I have also ordered a quantity of them to be sent to England.

H. PIDDINGTON.

With reference to the suggestion of the Curator on the subject of Captain Shortrede's Lithographic Stones, the Secretary was requested to address Government on the part of the Society to that effect.

For all the foregoing presentations and communications the best thanks of the Society was voted.

Proceedings of the Asiatic Society.—APRIL, 1844.

(*Wednesday Evening, the 3rd April, 1844.*)

The usual Monthly Meeting took place on Wednesday evening, the 3rd of April. The Honorable the President in the chair.

The following new Members were ballotted for and declared duly elected:—

B. Colvin, Esq. C. S.

W. Quintin, Esq. C. S.

The usual communications were ordered to be made to them.

The following list of Books presented and purchased was read:—

Books received for the Meeting of the Asiatic Society, on the 3rd of April, 1844.

Annaler for Nordiske Oldkyndighed, 1840-41 and 1842-43. Kjøbenhavn. Presented by the Society of Northern Antiquarians, 2 Nos.

The Edinburgh New Philosophical Journal, July to October, 1843. Presented by the Editor.

Mémoire sur la Découverte de L'Amérique, par Charles Christian Rafn. Copenhagen, 1843. Presented by the Society of Northern Antiquarians.

London, Edinburgh, and Dublin Philosophical Magazine, third series, No. 151-152, October 1843. From the Editors.

Journal Asiatique ou Recueil de Mémoires, quatrième série, tome 1, No. 4, Avril. No. 5 Mai tome 11, No. 7-8, Juillet et Aout. Presented by the Society.

Royal Asiatic Society of Great Britain and Ireland Anniversary Meeting and Twentieth Annual Report of the Council. London, 1843. Presented by the Society.

List of Members, Committees, &c. of the Royal Asiatic Society of Great Britain and Ireland, 1843. Presented by the Society.

Die Königliche Gesellschaft für Nordische Alterthumskunde. Jahresversammlung, 1842. Copenhagen. Presented by the Society of Northern Antiquarians.

Leitfaden zur Nordischen Alterthumskunde. Copenhagen, 1837. Presented by the Society of Northern Antiquarians.

The Oriental Christian Spectator, second series, March 1844, vol. v. No. 3, Editor.

Bulletin de la Société de Géographie, deuxième série, tome xix. Paris, 1843. From the Society.

Proceedings of the Geological Society of London, vol. iv, part 1, 1843, No. 93. Presented by the Society.

Proceedings of the Royal Society of Edinburgh, 1843, No. 22. From the Society.

Royal Society of Northern Antiquarians. Copenhagen, 6 Nos. Presented by the Society.

The Yacna of the Parsis in the Zend language, but Gujarát character, with a Gujarát translation, paraphrase and comment, by the late Framji Aspandearji. From the Bombay Branch Royal Asiatic Society.

The Bispard of the Parsis in the Zend language, but Gujarát character, with a Gujarát translation, paraphrase and comment, by the late Framji Aspandearji. From the Bombay Branch Royal Asiatic Society.

Notice Historique sur la Vie et les Ouvrages de M. le Major Rennell, par M. le Baron Walckenaer. From the Author.

Meteorological Register kept at the Surveyor General's Office, Calcutta, for the month of February 1844. From the Surveyor General's Office.

Transactions of the Royal Society of Edinburgh, vol. xv, part iii. From the Society. Journal des Savants. Paris, Juillet et Aout 1843. Purchased.

The History of the Mohammedan Dynasties in Spain, translated by Pascal de Gayangos, vol. ii. Printed for the Asiatic Society by the Oriental Translation Fund.

Les Sultans Mamlouks de Makrize, tome ii, lib 1. Printed for the Asiatic Society by the Oriental Translation Fund.

The Calcutta Christian Observer, April 1844. New series, vol. v. No. 52. Presented by the Editors.

Pritchard's Natural History of Man. London, 1843. Purchased.

Researches into the Physical History of Mankind, by J. C. Pritchard, vols. i, ii, iii. Purchased.

Mémoires de la Société Royale des Antiquaires du Nord, 1840-43, Section Asiatique. Copenhagen, 1843.

Read the following letter from the Society's London Agents, Messrs. Allen and Co.:-

H. TORRENS, Esq. *Secretary to the Asiatic Society of Bengal.*

SIR.—We have the pleasure to acknowledge the receipt of your favor of the 17th November last, enclosing a bill of lading for six cases of books, which are to be forwarded as addressed, and we are requested to transmit receipts for the same to the Society. We shall have much pleasure in attending to your instructions. We doubt if we shall be able to obtain receipts for all the cases, but if we can assure the Society that they are duly delivered, we conclude that will be quite satisfactory.

London, January 30, 1844.

W. H. ALLEN AND CO.

Read the following correspondence with reference to the transfer of the Buchanan MSS. and Drawings from the Botanic Garden to the Library of the Society:-

The Secretary to the Government of Bengal, Home Department.

SIR.—I am instructed on the part of the Asiatic Society of Bengal to beg, that you will submit to the Honorable the Deputy Governor of Bengal, the respectful request

of its Members, that His Honor will be pleased to order the Buchanan Drawings and MSS. now deposited at the H. C. Botanic Garden to be placed in the Society's Library.

The vast amount of knowledge in almost all its branches, relating to India, contained in these volumes, and the great expenditure to Government at which it was obtained are well known, while it is not less notorious, that partly from non-publication and partly from its almost entire inaccessibility as now deposited, this noble monument of the solicitude of the Government of India for the development of its resources has been hitherto a sealed book to the public. In order to remedy, however late, this long existent evil, the Society begs earnestly to press upon his Honor's consideration the advantage that may arise from placing such resources within the reach of all who may desire to profit by them; and this His Honor may perhaps incline to allow, might be best done by placing the drawings and documents above alluded to for general reference in the Museum of the Society; where they will be available to its officers in the several departments of science for reference and comparison.

The Society would engage to make use of this valuable material for the public benefit, adding to the value of its own publications by selections from the mass of the Buchanan documents, which it is hoped His Honor may gratify the Society by placing in its charge and custody.

H. TORRENS,
Vice-President and Secretary, Asiatic Society.

No. 798.

From Under-Secretary to the Government of Bengal, to the Vice-President and Secretary, Asiatic Society.

SIR,—With reference to your letter of the 26th January last, I am directed to transmit the enclosed copy of one from the Officiating Superintendent of the Honorable Company's Botanic Garden, No. 10, of the 13th ultimo, and to intimation, that his Honor the Deputy Governor has no objection to allow the Buchanan Drawings and Manuscripts to be temporarily deposited in the Library of the Asiatic Society, on the conditions therein stated, and has given directions to that Officer to forward them to you accordingly.

I have the honor to be, Sir,
Your most obedient servant,

A. TURNBULL,
Under-Secretary to the Government of Bengal.

Dated Fort William, 25th March, 1844.

No. 10.

*From W. GRIFFITH, Esq. Offy. Supt. H. C. Botanic Garden, to A. TURNBULL,
Esq. Under-Secretary to the Government of Bengal.*

SIR,—I have the honor of acknowledging the receipt of a letter from the Secretary to the Asiatic Society to the Secretary to the Government of Bengal, Home Department, on which I am desired to report.

2. It appears to me that there can be no objection to placing these very valuable Manuscripts and Drawings in the custody of the Asiatic Society, until such time as that Society shall have completed their publication or copies of them. But I think it should be understood, that this institution is the proper place of their permanent deposit, it being that of the Manuscripts and Drawings of Dr. Roxburgh, as it ought to be of those of all other Superintendents.* In this manner only can the series be kept complete, and each series can in this manner only guide Government to an opinion of the relative merits of the Superintendents it permits to hold this high scientific appointment. To this the almost entire inaccessibility alluded to in the Secretary's letter cannot be objected, that assuredly was never contemplated by Government, and has not existed since 1836, when it was removed by Dr. McClelland, and Government having shewn its anxiety to secure ready publication of documents, it assuredly cannot again be restored.

3. It would have been very desirable that this application had been made to Government when the fact of the Drawings and Manuscripts being here was first made known. For since that, I believe, the Society has been the means of making known zoological labours which would, had the Society's attention then been attracted prominently to these Manuscripts, &c. have been found to have been anticipated by Dr. Buchanan. The Society at this period cannot attach priority to the works of Buchanan.

4. It also appears to me desirable, that if Government decides on lending these Manuscripts and Drawings to the Society, it should be on the engagement proffered by the Society in the last paragraph of the Secretary's letter, and in exclusion of paragraph 2d, otherwise a stigma will be attached to this institution, which, as it is a public institution of Government, endowed in a liberal manner, and presumably superintended in a liberal and open manner, it cannot *in se* be considered to merit.

5. Pending the receipt of his Honor's final instructions, I shall construct a complete catalogue of the Manuscripts and the Drawings to be retained here for the information of Government.

I have, &c.

Honorable Company's Botanic Garden,

(Signed) W. GRIFFITH,

13th February, 1844.

Offy. Superintendent.

(True Copy,) A. TURNBULL,

Under-Secretary to the Government of Bengal.

The Secretary called the attention of the Meeting to the alteration which had been made in the height of the pedestals on which the busts were placed; three of them having been reduced and the busts placed upon them for inspection. The alteration was approved of.

* We doubt much if Dr. Buchanan was ever a Superintendent of the H. C. Botanic Garden? —ED.

Read the following letter addressed to the Sub-Secretary, by the Rev. J. J. Moore, Secretary, Agra School-Book Society :—

No. 162.

H. PIDDINGTON, Esq. *Asiatic Society's Rooms, Calcutta.*

MY DEAR SIR,—Kindly excuse the trouble I am giving you, but will you send me a copy of all the Hindi and Sanscrit works the Asiatic Society may have for sale. They are intended for a Native Prince, and it is particularly requested, that each copy be neatly bound. They are intended for Maharaja Tukht Sing of Marwar. Maps in Hindi or Sanscrit would be also most acceptable. For the expense which may be incurred, I shall be responsible to the Society. It would be desirable if they could be forwarded under a frank, and as this privilege is allowed to Government Educational Establishments, probably in a case like the present, a similar indulgence would be granted. At all events do not let this be a bar to the transmission of the books for the Rajah.

I intend to publish an edition of the Rekha Ganita, in the Sanscrit Version of Euclid by Raja Savai Jai Sing. I understand there is a copy in the Society's Rooms which had been corrected by the late Jas. Prinsep; it would aid me very much could it be procured for the purpose of collating my MSS. with it.

25th March, 1844.

J. MOORE,

Secretary, Agra School-Book Society.

P. S.—Kindly also favour me with a few copies of the list of the Society's Books which may be for sale.

The Sanscrit works published by the Society were ordered to be forwarded, bound as requested. Upon inquiry it does not appear that the MSS. alluded to is in the Society's Library; the only copy of the Rekha Ganita, being one by Jaganath Pundit; but it was subsequently ascertained that the valuable copy of the Rekha Ganita, alluded to by Mr. Moore, was in the Library of the College of Fort Willam, and he was informed that a copy would be sent him if desired.

A recommendation of the purchase of several works, and a proposal to purchase a female Gayal now at Chittagong, were submitted by the Zoological Curator, which last was authorized.

Read the following letter from J. W. Roberts, Esq. accompanying the specimens alluded to :—

H. PIDDINGTON, Esq.

DEAR SIR,—I have the pleasure to send you for the Asiatic Society, a few Locusts of the legion that did so much mischief to the past season's indigo crop. They are from Nudjuffghur, near Cawnpore.

When at the Museum a few days ago, I did not perceive amongst the natural curiosities any specimen of this enemy to the vegetable kingdom, and they may not therefore prove unworthy of reception.

Calcutta, 13th March, 1844.

J. W. ROBERTS.

No. 14, Writers' Buildings.

P.S.—I send them as received, preserved in Cognac brandy.

Read the following letter from J. Owen, Esq., accompanying the Arms presented by that gentleman :—

To H. TORRENS, Esq. *Secretary, Asiatic Society.*

SIR,—I have the honor to forward herewith certain arms taken from the chiefs who were creating the disturbances at Ningroo during the past year. No. 1 is a Naga Dao, and No. 2 a Singphoe one.

The Society's acceptance of the same will confer honor on

Yours faithfully,
J. OWEN.

On the River, 19th March, 1844.

REPORT OF THE CURATOR MUSEUM OF ECONOMIC GEOLOGY AND GEOLOGICAL
AND MINERALOGICAL DEPARTMENTS, FOR THE MONTH OF MARCH.

Our zealous correspondent Captain Newbold, Assistant to the Commissioner, Kurnool, Geological and Mineralogical, has sent us from Beypoor, near Calicut, a specimen of the lignite of the beds of that locality which, he thus describes.

"By to-day's banghy I have the pleasure to forward to the Society a specimen of the lignite from a bed of considerable extent in the laterite sandstone near Beypoor, in the vicinity of Calicut, on the Western Coast, discovered by myself in 1840. It is associated with sulphur, sulphates of alumina, iron, retinasphalt and mineral coal. The shales immediately in contact have a rarely perceptible dip, are black, carbonaceous and aluminous, and contain scattered spangles of mica. The bed of lignite itself is from one to three feet thick, and can be traced about half a mile up the river. General Cullen recently writes me, that he now sees much of this carbonaceous deposit in Travancore, and that it is very extensive. It exhibits itself in beds of black clay and lignite of considerable thickness in the laterite cliffs along the W. Coast from Quilon to Venkully. Deposits of the same kind occur about the same level at the distance of two or three miles inland."

We have to acknowledge from Government, a further addition to our knowledge of the Cheduba group in a report from Lieut. Hopkinson, Assistant Commissioner, Arracan, who was also sent by the Commissioner, Capt. Bogle, to examine the spot where the Volcanic Island had appeared, and who, though he unfortunately was not acquainted with Mineralogy or Geology, has most zealously fulfilled his mission. His report will be incorporated in mine, and I may remark here, that several of his specimens are of very considerable interest.

The following are the letters from Government and from Mr. Commissioner Bogle:—

No. 687.

From Under-Secretary to the Government of Bengal, to the Secretary to the Asiatic Society.

SIR,—I am directed to transmit to you, copy of a letter from the Commissioner of Arrakan, No. 453, dated the 16th December last, and of its enclosures, relative to the visit paid by Lieut. Hopkinson, the Senior Assistant at Sandoway, to the site of the Volcanic Island which recently appeared for a time to the south-east of Cheduba, together with a box containing the geological specimens referred to in the fourth paragraph of Capt. Bogle's letter.

CECIL BRADON,

Under-Secretary to the Government of Bengal.

Fort William, 11th March, 1844.

(Copies. No. 453.)

From Capt. A. BOGLE, Commissioner in Arrakan, to T. R. DAVIDSON, Esq., Secretary to the Government of Bengal, General Department.

SIR,—Capt. Williams, Senior Assistant Commissioner in charge of Ramree and Cheduba, having in a letter dated 11th August 1843, No. 1928, copy of which is annexed, intimated to me that a volcanic eruption had occurred off the S. end of "False Island" in the end of July last, and that an Island had been formed on the spot, without however conveying to me any of the particulars, I considered it proper to write to him immediately to furnish me with the fullest information on the subject.

2. In reply he acquainted me, that it was wholly impracticable to approach "False-Island" during the S. W. Monsoon, and that the difficulties opposed to all communication with "Flat Island" or "Regweng," from whence the eruptions had been observed, were of such a nature, as to preclude the hope of being able to obtain any further information before the close of the rains.

3. As both the above islands are exposed to the full force of the Monsoon, and are surrounded by innumerable dangers, it appeared to me by no means justifiable to endanger life by endeavouring to conduct any inquiries prior to the termination of the tempestuous season; but in the month of October, I determined to depute Lieut. Hopkinson, Junior Assistant Commissioner, an officer of much intelligence and enterprise, to visit the site of the reported eruptions as soon as the state of the weather in the Bay of Bengal would admit of his proceeding to sea in one of the small Government Schooners belonging to this province, and on the 21st of that month, I accordingly addressed him letter No. 839, of which a copy is appended.

4. Immediately on its receipt, Lieut. Hopkinson proceeded to the spot, and having made a full and diligent inquiry regarding the interesting circumstances reported, and taken a survey of "False-Island," he has now favored me with a report under date the 25th ultimo, No. 86, of which I beg leave to transmit a copy, together with his Map of the "False Island," for submission to the Honorable the Deputy Governor of Bengal; and by the next trip of the "Amherst," I shall not fail to forward the different geological specimens which accompanied Lieut. Hopkinson's report.

5. As the newly created island, which, even if it had really existed, could never I apprehend have been any thing more than a mass of rock, has disappeared, and no apparent change has been occasioned by the eruptions, Lieut. Hopkinson found but little worthy of mention; but I nevertheless feel greatly indebted to him for the promptitude with which he repaired to the spot, and for the very satisfactory manner in which he has completed the duty entrusted to him, and I trust that his report and map will meet with His Honor's approval.

6. I am aware that much of the interest which attached to these volcanic eruptions may have ceased on the return of the "*Ganges*" Steamer from her recent visit to this coast, but still I think it due to Lieut. Hopkinson, that the endeavours previously made by him to collect the fullest information regarding them, should be submitted to the Deputy Governor, and that his Honor should be satisfied, that such remarkable changes are not regarded with indifference here.

A. BOGLE,

*Arracan Commr's. Office, Akyab, 16th Dec. 1843.**Commissioner in Arracan.*

No. 1828.

To Captain A. BOGLE, Commissioner in Arracan and Akyab.

SIR,—I have the honor to acquaint you, that the Soogree of "Flat Island" reports, that on the 26th, 27th, 28th, and 29th of July, a Volcano broke out a short distance, (30 bamboos, 360 feet,) he mentions, south of "False Island," and that a new Island has been formed on the spot.

Arracan S. A. Commr's. Office, Ramree,

D. WILLIAMS,

*The 11th August, 1843.**Senr. Asst. Commissioner.*

(True Copy.)

(Signed)

A. BOGLE,

Commissioner in Arracan.

From the Rev. Mr. Barbe, Roman Catholic Missionary at Chittagong, we have received a box of specimens of the ferruginous sandy breccias, conglomerates and concretions of that place, some of them much resembling those sent up, I think, in 1838, by Mr. Sconce, Magistrate of that district, and of petrified wood and lignite from the same quarter. We have unfortunately no details of the locality with these specimens.

From the Bombay Branch R. A. S. Society, we have received a second box of 72 Museum of Economic specimens for this department, and for that of Mineralogy and Geology. Geology, for which our best thanks are due. As the list is instructive, and it is always useful to have them on record, I have inserted it here.

List of Geological Specimens from Western India, presented to the Museum of the Asiatic Society, Calcutta, 2d series.

- | | |
|--------|---|
| No. 1. | Calcedony with Calc spar, Rajcote. |
| „ 2. | Altered sandstone, Kattiawar. |
| „ 3. | Jasper, Waukaneer, ditto. |
| „ 4. | From near Rajcote, ditto. |
| „ 5. | Altered sandstone, Waukaneer, ditto. |
| „ 6. | Marble (magnesian) of which Hoossain Shah's tomb is built, Mandoo, Mulwa. |

- No. 7 to 8. Basalt from between Mandoo and Mhow.
 .. 9. Calespar from Basalt, between Malwa and Mhow.
 .. 10 to 29. Minerals from between Mandoo and Mhow.
 .. 30 to 31. Basalt, Mazagon, Bombay. This takes a good polish, and is used for pedestals of statutes, &c.
 .. 32. From Balmeer hill.
 .. 33. " Ditto.
 .. 34. " Ditto.
 .. 35. " near Balmeer.
 .. 36. Gypsum, near Balmeer.
 .. 37. From Vindiah hills.
 .. 38. From whitish Basalt Rock, Parell, Bombay.
 .. 39 to 42. Recent formation, Allibaugh, Angria, Colaba
 .. 43 to 45. Ditto ditto.
 .. 46 to 47. Ditto ditto.
 .. 48. Basalt, ditto.
 .. 49. Piece of Rock from near Bhooj.
 .. 50. Basalt, Mazagon, Bombay. Laumonite with large crystals of Calespar, and globules of Prehnite scattered through the Laumonite. By J. E. Malcolmson, Esq.
 .. 51. Ditto. Laumonite penetrating Calespar and terminating in it, with the usual crystalline form, by ditto.
 .. 52 to 53. Nummulite limestone. Cutch.
 .. 54. Indurated clay containing Paludina Deccanensis, Physa Prinsepia. Geol. Trans. vol. v, pl. 47. Altered into a basaltic looking rock. Saugor.
 .. 55. Indurated clay (fresh water.) Gharni, foot of Nalchah Ghaut, (Vindiah hills,) between Mandoo and Mhow.
 .. 56. Indurated clay from Gharni, near Mandoo, with Melania Quadri-lineata.
 .. 57. Indurated clay with tertiary Lacustrine fossils. Gharri, foot of Nalchah Ghaut, northern escarpment of Vindiah mountains, between Mandoo and Mhow.
 .. 58. Cast of Physa Prinsepia, &c. Gharri, near Mandoo.
 .. 59. Physa Prinsepia, compressed. Gharri, near Mandoo, see Dr. Vosey on Gawilghur, As. Res. vol. xviii, p. 187.
 .. 60. Melania, quadri-lineata. Geol. Trans. vol. v, pl. 17. Gharri.
 .. 61. Cast of Melania, quadri-lineata. Ditto.
 .. 62. Cast of Paludina Deccanensis. Gharri.
 .. 63. Cypris Subglobosa. Gharri. Geol. Trans. vol. v, pl. 47, fig. 3.
 .. 64. Paludina Deccanensis, Chara Malcolmonii, Cypris Cylindrica, and Subglobosa. Munnoor Deccan, Geol. Trans. vol. v, pl. 47.
 .. 65. Variety of Calcedony from the Vindiah hills.
 .. 66. From the Bund of Arrore, Scinde.
 .. 67. Flint, pounded and burned, and worked for the formation of painted tiles, &c. at Hyderabad, Scinde, Sir Alexander Burney.

- No. 68. Flint for Pottery, west of the Indus opposite Hyderabad, Scinde. Sir Alexander Burnes.
 ,, 69. Believed to be the pointed flint, No. 68, used in pottery. From Sir Alexander Burnes' collection, but the label lost.
 ,, 70. Natron, Scinde. Sir Alexander Burnes.
 ,, 71. Sand of the Indus, label lost. Sir A. Burnes' collection.
 ,, 72. Limestone, Mazagon, Bombay.

JOHN G. MALCOLMSON,
Secretary, B. B. R. A. S.

Bombay, 9th February, 1844.

PRESENTATION OF A SILVER STANDISH TO H. TORRENS, Esq.

When the Geological Curator had concluded his portion of the business of the evening, the President, The Hon'ble W. W. Bird, rose and addressed the Meeting as follows. Before we proceed farther, I wish to draw your attention, gentlemen, to the beautiful specimen of Indian workmanship lying on the table in the shape of a silver inkstand, which is intended as a testimonial to Mr. Torrens, from his associates of the Asiatic Society, expressive of the deep sense entertained by them of his distinguished services. It will be in the recollection of many here present that about the commencement of last year, he was obliged, for reasons then stated, to resign the office of Secretary which he had for some time held with so much credit to himself, and so much advantage to the Society, and it was on that occasion that this testimonial was voted to him, which, under the superintendence of Mr. Piddington, has assumed the form of the very tasteful object now before us, and on which no pains or expense have been spared to render it worthy of Mr. Torrens' acceptance.

As few can have the opportunity of examining this elegant specimen of Indian manufacture, I will shortly describe it, and I cannot do so more appropriately than in the words of Mr. Piddington, who has kindly favored me with a memorandum on the subject.

"The style," he says, "of the testimonial is Moorish, (Arabesque,) chosen as the most appropriate one in reference to Mr. Torrens' able and spirited translation of the Arabian Nights, (the Alif Leila,) dedicated by him to the Asiatic Society; the only translation of that classic work which has exactly painted to the English reader in his own language, and with the colours of his own imagination, the minds and the life of the children of the East."

"It is placed on a basement of shawl-work of which the pattern is the Shamrock, in allusion to Mr. Torrens' Irish origin. The frosted wreath above this basement is composed of the rose (Persia,) the Lotos (India,) and the Jessamine (Arabia.) These flowers are from nature. All the other decorations are from the Alhambra, or from the great Mosque at Cordova, two of the wonderful and imitable monuments of a people, who seem to have been almost led to construct them as lessons to the human race of the imperishable glories of science, literature and the arts, as compared with those of conquest.

"The centre and surmounting ornament is an exact model of the Fountain of Lions in the Alhambra. It has been chosen, not only from its beauty, and its numerous historical associations with the magnificent era of the Arabian Khalifs of Spain, but also from

its being in itself a curious and a solitary instance of the practice of an art forbidden in the Koran, by Mahomedan artists. It is one of those unique and precious monuments which the arts have given to History and to Poetry, at the sight of which a thousand associations with the annals of a whole nation, (the European Arabians,) now extinct, are awakened in the mind. I need not remark here, that every page of these annals from the landing of El Tarikh to the glories of the Omniyades, the winding sheet of Abderahman, the conquest of Granada, and the dismal farewell of the heart-broken Moors to their terrestrial paradise the Vega of Granada, is pre-eminently the classic romance of History: of which the Fountain of the Lions is still the talisman.

"It was the beautiful custom of the Arabs of old to adorn their public and private buildings, and even their weapons and domestic furniture, with inscriptions allusive to their purposes, or suggestive, or laudatory, of great, and good, and useful works and thoughts, whether religious or secular. We have in our tribute adopted this custom also, and while we have appropriated one tablet to commemorate our gift, we have, in the Arabic inscription on the opposite compartment,

لماه يا صاحبي ازكي من الصدق
ولا كنليب ملبيم منبع الحق

of which the paraphrase may be rendered—

"There is no fountain like the mind,
"There is no water clearer than Truth,

conveyed an aphorism of which no one better than Mr. Torrens can appreciate the hidden meaning."

Such is the testimonial, and in presenting it to Mr. Torrens on the part of the Society, I beg to assure him, that it affords me the most sincere gratification to be their representative on the occasion, and the channel of communicating to him a token of estimation so well deserved. I beg also to assure him on their part, and likewise on my own, of the satisfaction we feel at his having been so obliging as to resume the situation in which the services, now so inadequately acknowledged, were rendered by him, and their conviction, that the Society of which he is so distinguished a member, will be indebted to him for still further services, and that he will earn for himself, by the exertion of his eminent talents, still further testimonials of their esteem and approbation.

Mr. Torrens then rose, and replied in nearly the following words:—

Honorable Sir, and Gentlemen, my Fellow-members of this Society,—I will not in ordinary phrase attempt to speak of embarrassment in now rising to address you. My gratification is too heartfelt and sincere to admit of any such sensation, and under its influence I will endeavour to express on the spur of the moment my thanks to you for this splendid, and to me, inestimable testimonial. If I do not do so in set terms, you

must pardon me, for I have felt myself unable to write a set-speech in anticipation of this high honor now conferred, and I have therefore judged it best to trust to the spontaneous utterance of the heart, if I may so say, which sometimes by its truth gives weight and dignity to even the sorry phrases of a speaker but little practised.

Gentlemen, the first and most anxious desire of every man, who has in any sort addicted himself to literary pursuits, is the thirst for literary distinction. This I have felt in common with thousands a thousand times better qualified to earn, and to deserve it, than I ever have been, or could ever be, but my position offered to me little expectation of being at any time able to achieve it. The days are passed when men engaged in this country as public servants, could without any dereliction of duty enjoy the luxuries of lettered ease, and follow steadily up their literary labours, or their plans of historical or scientific research, *pari passu* with the performance of their official functions. The calls of office have greatly multiplied as was natural they should do, with the extension and consolidation of the British power in this country, and the enjoyment of that leisure which enabled a Jones, a Colebrooke, or a Wilford to enrich our sum of knowledge by the valuable results of their researches, can be no longer hoped for by those who have succeeded them. It may be said there were giants in those days, and doubtless few have since appeared who could rival or compete with the galaxy of able, and learned orientalists, whose labours in the early days of this Society rendered its name illustrious in the scientific world of Europe,—who led to the foundation of the Asiatic Societies of London and of Paris,—nay, more, who brought about that taste for the study of Sanscrit literature, which in Germany particularly has led to discoveries in philology, and in the history of nations as traceable thereby, not less invaluable than unexpected.

In addition to the disadvantage above alluded to, I had in taking the office of your Secretary, the discouraging example of what in this enervating climate over-exertion in literary, combined with official labours, will effect, in the person of my esteemed and lamented friend and predecessor, James Prinsep. Where such a mind was unequal to support the strain, I felt how idle and absurd it would be in any one less qualified for the struggle by varied ability, and copious information, to attempt to venture on it. I therefore determined, instead of endeavouring at something new, to work out to the best advantage, the unemployed and unillustrated treasures of our various collections, and, conscious of my incapacity save in superficial attainments on a limited field, I decided on attempting to obtain the services, and superintend the labours of men really competent in distinct branches of science. Our then President, Sir Edward Ryan, warmly supported my views, the local Government, to its honor be it spoken, came forward with liberal and timely aid, while the Honorable the Court of Directors consented to uphold us in that spirit of munificence which it has often evinced in matters of science. Thus, Gentlemen, I found shortly afterwards associated with me, our curators, Messrs. Piddington and Blyth, and while I laboured to convert the Journal, (then my property,) into a Journal of General Science in accordance with the plan laid down by Sir William Jones on instituting this Society, instead of attempting chiefly to work out in it the doubtful problems of antiquarian research,—while I was occupied in procuring material for our Transactions,—in arranging and digesting our records, and in providing for the printing and publication of Oriental works (and I more

particularly allude to the reprint of the three first volumes of the *Fatwa-i-Alumgeeri*)—these gentlemen busied themselves on the one hand in re-arranging our geological and mineralogical collections, then to all appearance in hopeless confusion, and in classifying them by catalogues recovered from the disordered mass of our papers,—and on the other in re-stocking—I may say, in creating—our Museum of Zoology. If our relations with other scientific bodies have been renewed, and enlarged,—if the name and character of our Society has been worthily maintained—if we are now possessed of a Museum which taken in conjunction with our Library, and our antiquarian treasures, places this Society first as a scientific body in the dependencies of the British Crown,—I take no credit to myself apart from these, my zealous and worthy fellow-labourers.

Happily placed in conjunction with them, it has been my fortune to have by your kindness accorded to me as your Secretary, that literary distinction, so earnestly, and ambitiously desired, but which I could have hoped to obtain in no other but such circumstances. There are times, Sir, when such distinction, proud as it is, becomes doubly welcome, and I am in the position to feel its value at this moment most sensibly.

Let me, Mr. President, express to you briefly my personal feeling of gratitude for much good will shewn towards me, and for the constant support which you have afforded me in my endeavours to carry out arrangements, of which you were pleased to approve, for the benefit of the Society. Let me here express to the Asiatic Society of Bengal, my heartfelt acknowledgments for this magnificent token of their good opinion, and to assure them, that its receipt highly enhances the steady inclination I have ever had to devote in so far as occasion permits, my poor services to the promotion of their interests.

Gentlemen, I most heartily and sincerely thank you.

In pursuance of the desire expressed by Members, the following Memorandum was circulated by the Sub-Secretary, and under the order upon it the annexed plate of the Standish is given.—H. P.

MEMORANDUM BY THE SUB-SECRETARY.

The Honorable the President and Committee of Papers, Asiatic Society.

After the conclusion of the meeting of Wednesday evening, several Members expressed a wish, that a lithograph of the Standish presented to Mr. Torrens, should appear in the Journal,

The Sub-Secretary solicits the orders of H. H. and the Committee.

He may remark, that such objects are strictly within those of the Society, which in the words of its illustrious founder, embraces in its enquiries, “whatever is performed

by man or produced by nature," and it may not be, moreover, interesting to place upon record, any step in the fine arts made under the patronage of the Society.

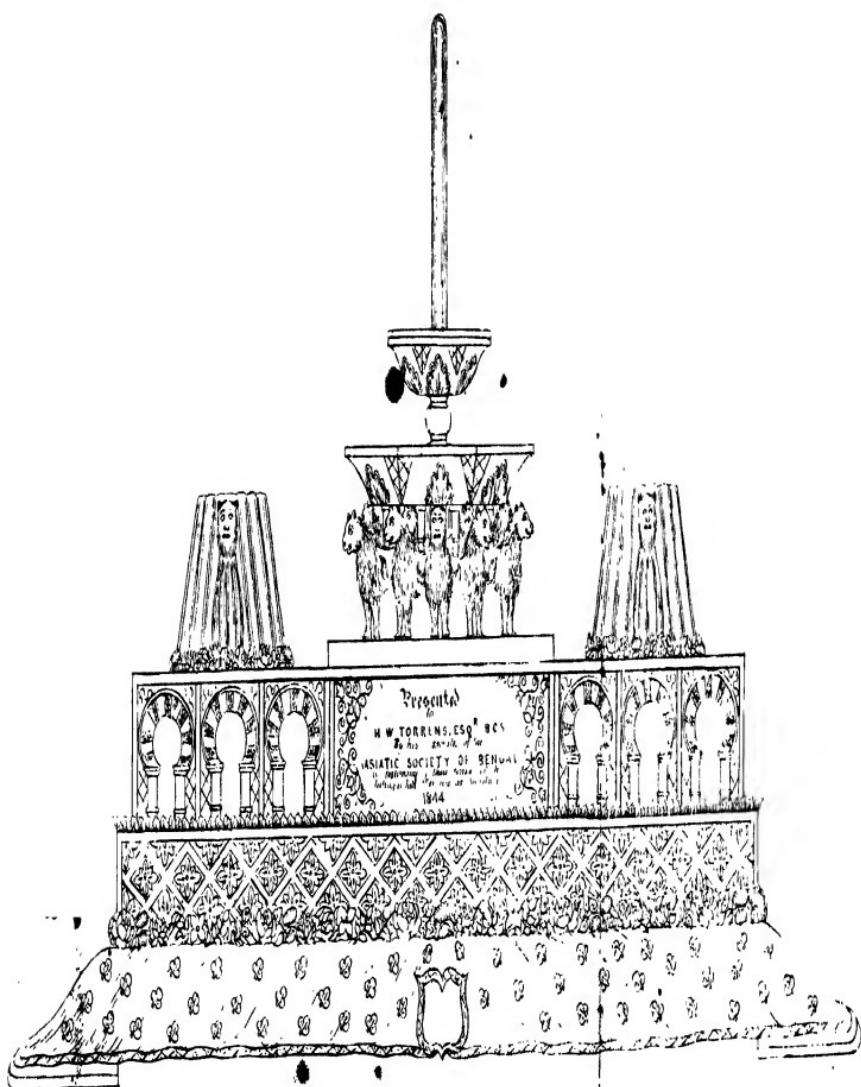
Many Mofussil Members also have subscribed to the Testimonial, and will no doubt be happy to see their money satisfactorily laid out.

H. PIDDINGTON,

Museum, 4th April, 1844.

Sub-Secretary, Asiatic Society.

For all the foregoing communications and presentations, the best thanks of the Society were voted.



*Elevation of the front of the Silver Ink Stand,
presented by the Asiatic Society of Bengal to H. Torrens Esq.*

3rd April 1844.

On Stone by J. Bennett and

Designed by H. Paddington

Presented by P. D'Almeida & Co Oriental Silk Print

In Silver by Henry Fully Brothers 1/2

Proceedings of the Asiatic Society.—MAY, 1844.

(Wednesday Evening, the 1st May, 1844.)

The stated Monthly Meeting was held on Wednesday evening, the 1st instant, at half-past eight p. m. The Honorable the President in the chair.

The following list of books presented and purchased was read.

Books received for the Meeting of the Asiatic Society, on the 1st of May, 1844.

Report on Public Instruction in the Bengal Presidency, 1842-43.—Presented by Dr. Mouat.

The Oriental Christian Spectator, April 1844, vol. v, second series, No. 4.—By the Editor, Bombay.

Meteorological Register kept at the Surveyor General's Office, Calcutta, for the month of March.

Nalodaya.—By the Rev. J. Yates.

Papillons Exotiques, par F. P. Cramer, Amsterdam, 1779-1791, 5 vols. 4to.—Presented by Capt. W. Wroughton.

Natural History of Uncommon Birds, by G. Edwards, London, 1743-1754, 7 vols. 4to.—Presented by Capt. Wroughton.

Read the following letters from Messrs. W. and H. Allen and Co., the Society's London Agents.

HENRY TORRENS, Esq. &c. &c. &c. V. P. Asiatic Society of Calcutta.

Sir,—We have the honor to acknowledge the receipt of your favors, dated 5th September and 13th December 1843, and also the copy of a letter addressed by you to Mr. John Murray. As we learn from you that the Journal from No. 133 is now vested in the Society, we think it advisable to annex you our account, embracing No. 132, which is £9:19:2 in favor of the Society. We have received from Mr. Murray £21:9, which is placed to the credit of the Society. The stock of Books in the hands of Mr. Murray will be forwarded to you in a day or two.

The quantity of Books in the Warehouse of Mr. Murray, belonging to the Society, is very heavy, and you must be aware that we can never dispose of them here. Of some volumes, Mr. Murray will hand us more than 200 copies. We would recommend something being done with them, and we think they might be returned and disposed of in India with more advantage than they would be here, where they could only be sold as waste paper. Every year they are kept, they will be of less value to the Society. If they were advertised, we fear the sales would not pay the expences of so doing. If you will favor us with the wishes of the Society, at an early date, we shall be much obliged to you.

We are, Sir,

Your faithful Servants,

Wm. H. ALLEN AND CO.

G

London, Feb. 29, 1844.

HENRY TORRENS, Esq. for *Journal of the Asiatic Society of Bengal*, in
Account with W. H. ALLEN AND Co. Cr.

Journal, No.		On hand June 30, 1843.	On hand Feb. 28, 1844.	Sold.	Per Copy.	£	s.	d.
		Received since.		2/9				
97	.....	8	8	..	..	..	..	..
98	.....	7	7	..	..	..	..	..
99	.....	12	12	..	..	..	..	..
100	.....	11	11	..	..	..	..	..
101	.....	9	9	..	..	..	..	..
102	.....	11	11	..	..	..	..	..
103	.....	9	9	..	..	..	..	..
104	.....	7	7	..	..	..	..	..
105	.....	8	7	..	..	..	..	..
106	.....	8	8	..	..	..	..	..
107	.....	11	11	..	..	..	..	..
108	.....	11	10	..	..	..	..	..
109	.....	9	7	..	..	..	..	..
110	.....	12	12	..	..	..	..	..
111	.....	12	12	..	..	..	..	..
112	.....	11	11	..	..	..	..	..
113	.....	11	11	..	..	..	..	..
114	.....	11	11	..	..	..	..	..
115	.....	12	12	..	..	..	..	..
116	.....	13	13	..	..	..	..	..
117	.....	12	12	..	..	..	..	..
118	.....	10	10	..	..	..	..	..
119	.....	10	10	..	..	..	..	..
120	.....	13	13	..	..	..	..	..
121	.....	14	14	..	..	..	..	..
122	.....	15	15	..	..	..	..	..
123	.....	17	17	..	..	..	..	..
124	.....	16	9	25	..	..	..	..
125	.....	1	35	1	..	..	..	..
126	.....	18	14	4	..	..	11	0
127	.....	18	16	2	..	..	5	6
128	.....	23	17	6	..	..	16	6
129	.....	..	50	18	*20	..	2	15
130	.....	..	50	17	21	..	2	17
131	.....	..	50	18	20	..	2	15
132	.....	..	50	18	20	..	2	15
Paid Sundry Porterage, Book- ing and Advertising,				£2	3 4	£13	9	6
Commission 10 per cent, .....				..	1 7 0	..	3	10 4
						£9	19	2

London, February 28, 1844.

E. E.
W. H. ALLEN AND CO.

* DISTRIBUTED.

- 1 Copy each No. 129 to 132 to Professor Wilson.
- Do. Ed. Asiatic Journal.
- Do. Royal Society.
- Do. Royal Asiatic Society.
- Do. Ed. Phil. Journal.
- Do. Royal Institution.
- Do. Philosophical Magazine.
- Do. Athenaeum.
- Do. Baron Von Hammer Purgstall.
- Do. Royal Society of Edinburgh.
- Do. Spectator.
- Do. Professor Schlegel.

H. TORRENS, Esq.

DEAR SIR,—You may remember about two years ago, the Asiatic Society ordered Arrowsmith's Map of India from us, which was shipped to the Society in January 1842. The order from the Society for it is worded thus: "As soon as possible send to my address, as Secretary to the Asiatic Society, a copy of the latest Map of India, by Arrowsmith, of the largest size, on spring rollers, &c. for the use of the Society."

The order was strictly complied with in the selection of Arrowsmith's largest and latest Map; on its arrival the Society write,

"The letter advising the dispatch of Arrowsmith's Map has come to hand, but I beg to observe, that although my letter of the 15th May 1841, commissioned the *latest published* Map by Arrowsmith, yet you are aware that since the Map was compiled by him, *Arrowsmith*, more countries have been acquired and more full and complete Maps of India have been published under the auspices of the East India Company; and if the Society is not much mistaken, these publications have been undertaken by yourselves. Under these circumstances the Society expected, that notwithstanding Arrowsmith's Map was *specially* ordered, you would have exercised your judgment to send the latest and most complete Map of India instead of the one sent by you. The Map from its incompleteness is quite useless to the Society, and as such, it is, I regret to say, rejected, and made over to Messrs. Thacker and Co., to whom you will please give instructions for its disposal."

The Society again write on the 5th September, 1843:—

"Although the Society is not disposed at present to disturb the account current closed to the 30th June 1843, yet I am desired to say, that it is susceptible of adjustment with reference to my letter of February, as regards the cost and charges of Arrowsmith's Map; viz. £18 10s, which has been rejected by the Society as incomplete. You have already been advised that the Map has already been made over to Messrs. Thacker and Co. for disposal on your account."

On perusal of the foregoing it will be clear to you, that we had no alternative, but to forward the Society Arrowsmith's Map of India, which is *double the size* of ours. It would have been much more to our advantage to have disposed of our own publication instead of purchasing Arrowsmith's; but it would not have been either honest to the Society or to Arrowsmith, had we done so. We concluded that Arrowsmith's Map was well known to the Society, and for aught we knew, the Society might have already possessed our Map, which is always procurable in Calcutta. Under these circumstances it is quite clear, that it is no fault of ours that the Map ordered to the Society has proved of little use. We conclude the Map to be still in the hands of Messrs. Thacker and Co. For the last year we have had no connection with them, and it is not our

intention to renew it. We trouble you with this letter *privately*, and shall be obliged by your explaining the matter to the Society. It would not be reasonable to suppose we can bear the loss of £18 10s, when *no error* had been committed by us. The agency of the Society is, as you must be aware, at times very troublesome, and for which we never make any charge, but on the contrary often study to promote its interest at our own expense. This we shall continue to do, and consider the interests of the Society as identical with our own. Our Map of India has just been corrected, at a great outlay, to the present date, and if the Society desire to possess it, it will cost about £10 10s. including shipping expenses to Calcutta.

We are, dear Sir,

London, February 29, 1844.

Your faithful Servants,

W. H. ALLEN AND CO.

Read the following letter from Government, accompanying the work to which it refers :—

No. 550 of 1844.

*From W. EDWARDS, Esq. Under-Secretary to the Government of India, to
H. TORRENS, Esq. Vice President and Secretary to the Asiatic Society.*

Foreign Department.

SIR,—I am directed by the Governor General in Council to transmit to you, for such notice as the Society may deem it deserving of, the accompanying Grammar of the Cashmeree Language, by Major R. Leech, C. B.

I have the honor to be, Sir,

Your most obedient Servant,

Fort William, the 6th April, 1844.

W. EDWARDS,

Under-Secretary to the Government of India.

This Grammar was referred to the Editors of the Journal for publication.

Read the following letter from Dr. Griffith, Acting Superintendent H. C. Botanic Garden :—

MY DEAR SIR,—Dr. Martius, the learned writer on Brazil, and a high scientific character, is anxious, as Secretary to the Mathematico-Physical part of the Ratisbon Academy, to ascertain whether the Asiatic Society would be willing to enter on a system of interchange of publications and objects with that Academy, and if so, what are the publications, &c. the Society would wish to have, and of what it would be convenient to the Society to dispose.

I shall feel obliged if you can give me such information as will be sufficient to guide Dr. Martius, and hope that it will be such as will enable him to complete what he earnestly desires, a constant and liberal exchange with the Head Society of India.

I am, My dear Sir,

Your's truly,

Botanic Gardens, April 20, 1844.

W. GRIFFITH,
Member, Royal Ratisbon Academy.

Ordered, that a letter expressing the best thanks of the Society for the friendly overture of Dr. Martius, and the Society's desire to promote on its side the most friendly relations with the University of Ratisbon be sent.

Read the following letter from Captain Williams, 1st Assistant Commissioner of Arracan :—

Dear Sir,—I have the pleasure to inform you, that I have forwarded to KymkhrOO for the purpose of being conveyed on the "Amherst" to you, an iron anchor stock, found on Chedooba, at the spot where the gold coin and javelin heads were discovered. I can obtain no information whatever from the Mugs about it, but it may throw some light towards the discovery of the country and age of the coins.

Your's very truly,

Ramree, Arracan, March 27, 1844.

D. WILLIAMS.

The Sub-Secretary submitted to the Meeting an impression taken from the iron bell from Ningpo, presented by Captain Warden, H. C. Steamer Queen, to the R. R. the Bishop for the Cathedral. It was proposed and approved of, that this should be first sent to China, for translation by Mr. M. Callery or Gutzlaff, in order to learn before proceeding farther, whether the inscription contained any thing of importance and worth the trouble of taking off.

Read the following letter from Dr. Roer, accompanying the valuable translation to which it refers, which was referred for publication to the Editors of the Journal.

MY DEAR TORRENS,—I send you the first four chapters of my Translation of Bhāskara Acharya's work on Astronomy; this is about the fourth part of the whole, and sufficient, I think for one number of the Journal.

Your's sincerely,

20th April, 1844.

G. ROER.

Read letter from the Rev. W. Yates, addressed to the Honorable the President, with a copy of the "Nalodya," the able and very useful work to which it refers.

The Honorable W. W. BIRD, Esq. President of the Asiatic Society.

DEAR SIR,—If it is not giving you too much trouble, will you allow me to beg of you the favour of presenting to the Asiatic Society at their next Meeting the accompanying work. It is so much in keeping with the designs of Sir W. Jones, the noble founder of the Institution, that I venture to entertain the hope, that it will not be unacceptable.

I am, your's very truly,

W. YATES.

April 12, 1844.

Read the following letter from J. Muir, Esq. C. S.:—

H. W. TORRENS, Esq. Secretary to the Asiatic Society of Bengal.

MY DEAR SIR,—I am sorry to find that the untoward circumstances mentioned in your letter, (received some time ago in Calcutta,) have for the present put a stop to the measures in progress for the publication of the *Sáriṇa Vidyā*. Could you kindly give me an idea what it would cost to print and edit the MS. in the manner formerly proposed, either with or without the plates, which were to be had out from England. In the mean time, I should like if possible to have a MS. copy of the work, if that can be allowed me, in the Nagree character, and if you would be good enough to order it to be put in hand, I will remit the cost of copying.

I remain, My dear Sir,

Your's faithfully,

Agra, April 9, 1844.

J. MUIR,

Member of the Asiatic Society of Bengal

Ordered, that a statement be drawn out and submitted in the first instance to the Committee of Papers.

REPORT OF THE CURATOR MUSEUM OF ECONOMIC GEOLOGY, AND GEOLOGICAL AND MINERALOGICAL DEPARTMENTS, FOR THE MONTH OF APRIL, 1844.

From Major Crommelin, B. E. through Messrs. Colvin and Co. we have to acknowledge a very handsome donation of upwards of 200 specimens of Rocks and Minerals, Scottish, English, (Cumberland and Westmorland,) and Foreign, with about a dozen specimens of organic remains, amongst which last I may note as a valuable addition to our cabinets, portions of the jaw with teeth, of an *Ichthyosaurus*, and a beautiful slab with remains of the Briarean Pentacrinitite. Of the rocks and minerals, many are very great additions to our cabinets, and all would have been far more so had any numbers or labels remained to the rocks by which we could have referred them to the localities from which so many derive

their value. The minerals are of course easily recognised and re-numbered, but to identify the rocks, of which there is but a mere dealer's catalogue, is necessarily a work of much longer time, as many books and descriptions must be referred to, and in the end, a few will be always uncertain. Nevertheless, the Society is under very great obligation to Major Crommelin for his liberal donation, and I trust that gentlemen who may, like him, have old dealer's collections, or even remnants of collections, will not be deterred, by their imperfect state and want of numbers or catalogues, from sending them. We shall always be able to turn them to some account.

I have to record to-day also, another instance of the attention of the Government of India, and the Honorable Court of Directors, to our wishes as to a Map of the country comprised in Dr. Voysey's report, published in vol. II. of the Journal, where at p. 304, the sections but not the Map are given. The following is the letter from Government accompanying this Map :—

No. 90.

From T. R. DAVIDSON, Esq., Officiating Secretary to the Government of India, to H. TORRENS, Esq., Secretary to the Asiatic Society.

Home Department.

Sir,—With reference to your letter dated the 27th of August 1842, I am directed by the Honorable the President in Council to transmit to you the accompanying Copy, Para. 30 of a Despatch from the Honorable Court of Directors No. 17 of 1843, dated the 1st November, together with Dr. Voysey's Geological Map of the Country between the Godavery and the Kistna therein alluded to, for the use of the Museum of Economic Geology.

I am, Sir,

Your obedient servant,

Council Chamber, the 27th January, 1844.

T. R. DAVIDSON,

Offy. Secy. to the Govt. of India.

Extract from a Despatch from the Honorable the Court of Directors in the Public Department, dated the 1st November 1843, No. 17.

Answer to Secretary's Letter, dated 12th October, No. 20 of 1842.

30. There is only one Geological Map connected with Dr. Voysey's report, which includes part of the country between the Godavery and the Kistna. A copy of this Map is forwarded as a number in the packet.

Requesting to be furnished with a copy of Dr. Voysey's Geological Map for the Museum of Economic Geology.

(True Extract.)

T. R. DAVIDSON,
Offy. Secy. to the Govt. of India.

This would have been brought forward at the same time as Major Herbert's Map, but it came in late, and I detained it from that report to refer to the Journal, and (for which I have to apologise) forgot it at the next Meeting.

I have the pleasure to exhibit a very well drawn and accurate copy of Captain Herbert's Map from the press of Messrs. D'Rozario and Co., which is now in progress of colouring, and will be distributed with a number of the Journal; a large margin being left to take it out and put in again to the volume to which it belongs. I have farther

preserved some blank copies of this valuable little Map for the use of the Geological Department of the Museum, and I hope by distributing some to our zealous friends to obtain from them some notes and fillings up, to aid our knowledge of that interesting part of India.

From Mr. J.N. Martin, Executive Officer, Lower Assam, we have received through
Colonel Garstin, Superintending Engineer, Lower Provinces,
Museum of Economic two chests containing specimens of ancient earthen tiles, of
Geology. rocks and soils, and of wood from that country.

Mr. Martin's Letter is as follows:—

No. 320.

*From Mr. J. N. MARTIN, Executive Officer, Lower Assam, to Colonel E. GARSTIN,
Superintending Engineer, Lower Provinces.*

SIR,—With reference to your Circular No. 12 of the 4th August 1842, forwarding a printed letter and statement from the Curator Museum of Economic Geology, I have the honor to annex a list of specimens collected by me in this division, which I shall be obliged by your allowing me to put on board one of your boats for transmission to the presidency.

2. Specimen No. 1 was dug out of some old ruins which were being levelled at Gowhatti, in which No. 4, 5 and 6 were also found, and probably formed some part of a Temple. These fragments will suffice to shew the state of the arts in Assam in former days. I regret that these specimens are not more perfect; they are the only ones of the kind I have met with.

3. Specimens No. 7, 8, and 9 are from stones lying about Gowhatti, and which seem to have formed extensive buildings, (Temples,) which have long since disappeared, the remains of which are scattered over the station, and are constantly being dug up. Some of the stones are fine specimens of workmanship. The rock from which the stone seems to have been quarried is found at the base of the Hills about Gowhatti, laid bare by the Burrampootur and in rocks in the river.

4. Specimens No. 10 and 11 are from the ruins of an old brick Temple at Tezpoor. 12 and 13 are specimens of granite from the same place from stones wrought and unwrought, an immense number of which have been collected for the purpose of some extensive buildings, (probably Temples,) which from the appearance of the stones seem never to have been used in any building. The stones appear to have been quarried from rocks in the Burrampootur, and from the base of the Hills in the vicinity.

5. Specimen No. 16 is soil from Ranee Godown, said to be adapted for the cultivation of tea, and extends over a large tract of country. On my late visit to Gola Ghaut, 175 miles above Gowhatti and 200 above Ranee Godown, I was struck with the similarity of the soil on which an individual has commenced the cultivation of the tea plant. No. 17 is a specimen.

6. Specimen No. 18 is a brick dug out of the ruins of an old Temple, probably Mahomedan, at Gowalparah, and bears a Persian inscription. From its appearance it seems to have formed a step or floor, and is evidently of recent date compared with the ruins found in Assam.

Proceedings of the Asiatic Society for the month of JUNE, 1844.

Wednesday Evening, the 5th JUNE, 1844.

The Monthly Meeting of the Society was held at the usual hour on Wednesday evening, the 5th June, H. Torrens, Esq. Vice President in the chair.

The following list of books presented and purchased, was read :—

Books for the Meeting of the Asiatic Society, June 5, 1844.

1. Meteorological Register for the month of April 1844, from the Surveyor General's Office.
2. The Oriental Christian Spectator for May 1844, No. 5, 2nd series.—Presented by the Editors.
3. Journal of the Agricultural and Horticultural Society of India, Vol. II, No. XI, 1844.—Presented by the Society.
4. Annals and Magazine of Natural History, Vol. XII, No. 76 for 1843.—Purchased.
5. Proceedings of the Academy of Natural Sciences of Philadelphia, Nos. 30, 31, 32 and 33.—Presented by the Society.
6. The Athenaeum, for March 16th and 23rd, 1843.—In exchange for the Society's Journal.
7. Report of the Secretary of the Navy U. S.—Presented by M. R. Johnstone.
8. Magnetic Observations from the Observatory of Bombay.—Presented by Government.
9. Goodwyn's Memoir on Wrought Iron Roofing, with a Vol. of Plates.—Presented by the Author.
10. Brief Grammatical Notice of the Siamese Language, with an Appendix, by T. Taylor Jones.—Presented by the Author.
11. Notes on the Marine Glue, by Alfred Jeffries.—Presented by Mr. J. De Garnier.
12. L. Asie Centrale ; Recherches sur les chaines de Montagnes et sur la Climatologie, Vols. 1, 2, and 3, par A. de Humboldt.—Presented by the Author.
13. Pearl Fisheries of Ceylon, by J. Stewart.—Presented by C. B. Greenlaw, Esq. in the name of the Author.
14. Napier's Peninsular War, Vols. 3, 4, 5, and 6.—Purchased.

15. Letters à G. de Tassy, on Sugat, &c. de sa Notice Institute Saadi, par M. Newbold.—Presented by the Author.

16. Saadi, Auteur des Premières Poesies Hindoosthani, par G. de Tassy, 1843.—Presented by the Author.

The Vice-President and Secretary stated with reference to Napier's Peninsular War, that as the Library contained many incomplete works, he would suggest that he be authorized, as occasions might present themselves, to complete such works. This was unanimously agreed to. He also noticed in terms of approbation, the valuable work of Mr. Stewart, on the Pearl Fisheries of Ceylon, a work undertaken, as he had been informed, from motives of public utility alone, and most creditable both in its design and execution.

Read the following letter from the Under-Secretary to the Government of India:—

No. 1093 of 1844.

From W. EDWARDS, Esq. Under-Secretary to the Government of India, to the Secretary to the Asiatic Society.

Foreign Department.

Sir,—By direction of the Governor General in Council, I have the honor to transmit to you, for such notice as the Society may deem it to merit, the accompanying report, by Captain Jacob, on the general condition of the Province of Kattywar, and on various points of information, chiefly of a geographical and statistical nature connected with that province.

2. It is requested you will return the document when no longer required.

I have the honor to be, Sir,

Your obedient Servant,

Fort William, the 25th May, 1844.

W. EDWARDS,
Under-Secretary to the Government of India.

Read letter from the Under-Secretary to the Government of Bengal, according free freight on the Government Steamers, for two boxes of books for the Education Committee, N. W. P.

Read the following letter from the Curator, Zoological Department:—

To the Secretary of the Asiatic Society.

Sir,—I beg to lay before the Society a request of Mr. J. E. Gray, of the British Museum, contained in a private letter to myself, that I would procure for him certain specimens procurable in this vicinity, for which he offers to pay a sum not exceeding £30 annually, to cover the expences of procuring and preparing of them, while the

cost of transmitting such to London will be defrayed by the British Museum. Should the Society approve of my undertaking the superintendence of such collections, the specimens might either be prepared by the Society's taxidermists, during the hours of their non-attendance at the Museum, or an additional taxidermist might be employed for the purpose, upon a salary deducted from the sum suggested by Mr. Gray.

I have also to request, on the part of Mr. Jerdon, that he may be allowed to publish figures of certain of the Society's birds in the course of his work, now in progress, upon Indian Ornithology; leaving it to me to make a selection for the purpose. I beg to recommend that Mr. Jerdon's offer to do so, be entertained by the Society, as our collection contains a very considerable number of species which it is most desirable should be figured, and could well spare as many as Mr. Jerdon could possibly require.

I wish to call the attention of the Society to the desire of certain Anglo-Indian youths, to be apprenticed to the Society for three or more years, in order to be taught the art of taxidermy. The difficulty which I have hitherto experienced in procuring such youths to assist in the Museum is considerable, and their usefulness is shewn by the large collection of skins now upon the table, most of those sent by Captain Phayre, having been prepared by a lad instructed at the Museum, with whom I furnished him, and who was employed by the Society in Arracan upon a salary of 5 Rupees a month, upon which terms two other lads are at present engaged, one on board the *Tenasserim* merchant-vessel, which at this time is on the coast of New Guinea, where I expect that many specimens will be collected, and the other is with Capt. Abbott at Ramree. The terms of apprenticeship required, on the part of the lads, who have now applied to me, are 3 Rupees a month for pocket-money, and a suit of clothes annually, which I understand is an usual mode of making such contracts in this country. Should the Society approve of such an arrangement being made with one or more of these youths, I should be glad of their assistance at the Museum immediately, where there is a variety of work upon which they might be at once employed.

I am, Sir,

Yours obediently,

ED. BLYTH.

June 5, 1844.

After some conversation it was settled, that the Curator of the Zoological Department, British Museum, be invited to address the Asiatic Society of Bengal officially, and that Mr. Blyth be also requested to address the Secretary, and to communicate with the Sub-Secretary fully in detail on the subject of the proposed apprentices. Mr. Jerdon's request was acceded to, but with the special proviso, that he should also be invited to address the Society officially, and that while all birds sent to him should be duly reported and recorded in the Society's Proceedings, he should also undertake on his part duly to acknowledge them in his forthcoming work as *from* the Society's Museum.

Read the following letter from M. Jules Mohl, Assistant Secretary to the Société Asiatique de Paris, addressed to the Sub-Secretary :—

Society Asiatique.

Sir,—I beg to acknowledge the receipt of your letter of the 14th of September 1843, by the *Gabrielle*, containing a ship-letter of a box of Manuscripts of the Vedas. I have sent the ship-letter to Marseilles, and expect every day to receive the box. I am charged by the Society to offer to you and to Ramcomul Sen, the Society's best thanks for your care and kindness.

The sudden death of M. Cassin, our agent, has imposed upon me the duty of examining all the papers relating to the Society, and to your Society's dépôt of books. I have made out the account, and am this moment occupied in making the list of books in the dépôt. I will report on it next month; until now I have found all in a satisfactory state. Unfortunately I have not yet found the lists of books which you had sent, and which M. Cassin ought to have bought for your Society; but as I have not yet been able to look over all the papers, I am in hopes of finding them yet, and of executing your instructions.

You mention in one of your letters, that 64 copies of the Index of the Mahabarut have been sent last year, we have received a parcel containing 64 copies of an Index to the 4th Vol. but none of the three 1st volumes. Has no Index to these been published?

I have the honor to be, Sir,

Your respectfully,

JULES MOHL,

Paris, 7th March, 1844.

Secrétaire adjoint à la Soc. As.

Ordered, that the Indices to Vols. 1st, 2d and 3d of the Mahabarata be dispatched to the Paris Society.

Read the following letter from Captain D. Williams, 1st Assistant to the Commissioner of Arracan :—

MY DEAR SIR,—I have the pleasure to inform you that, in searching for gold coins on the Island of Chedooba, of which I forwarded a couple to you, the natives have dug up a large bar of iron resembling the shank of an anchor. I have had it brought to my house, and shall have much pleasure in forwarding it to the Society if commanded to do so. On the spot also were found the two Javelin heads I sent to you, and mentioned in your Journal, No. CXLII, of 1843.

It may throw some further light towards the discovery of what country and age the gold coins belonged to.

Yours faithfully,

D. WILLIAMS.

P. S.—Since writing the above, I had an opportunity of sending the bar of iron or shank to Kyook Phyoo, to meet the *Amherst* for conveyance to Calcutta to your address.

The iron grapnel shank, for such it evidently is, herein referred to, is now placed on the right of the northern entrance to the portico of the Museum.

It is in tolerable preservation, though none of the grapnel claws are remaining. It measures six feet in length, but the circumference cannot be ascertained, as it is covered over with shells and an arenaceous-calcareous encrustation. It may have belonged to some European or Arab Vessel a century or more ago, and have possibly been elevated with the beach on which it was found. It cannot have belonged to the people by whom the gold coins were struck, for those betoken far too rude a state of the arts to admit of such a bar of iron having been forged, or been in use on a ship at the epoch when such coins were used.

Read the following letter from Baboo Gooroprasad Roy :—

The Secretary to the Asiatic Society.

SIR,—I have to beg that you will do me the honor to submit to the Asiatic Society, the accompanying specimen pages in type and Manuscript of a Sanscrit Dictionary in the Bengalee character, to be entitled the *Sobda Ratnakar*, and which will I presume be found of the greatest utility to Native Students of that language, and of much interest to Philologists and Scholars in general. In testimony of its merits, I further beg leave to submit the opinions of it, hereto annexed, both from Native Pundits and European gentlemen of high and acknowledged talent. The MSS. is completed, and can be sent to press.

Your Society, Sir, cannot but be aware that a work like this, though it has cost many years of assiduous labour, cannot be printed without a heavy outlay which I am, from straitened circumstances, unable to afford. The most careful estimates which I can make, supported by the opinion of Dr. Heberlin, carry the expence of the work to Co's. Rs. 8,600 for 500 copies, requiring a subscription of 160 copies at 50 Rs. each, to assure the Printer against loss.

I have therefore, Sir, respectfully to solicit that the Asiatic Society of Bengal will be pleased to accord to me such measure of patronage and support and recommendation as they may deem my labours to merit, and I beg to assure it, that no attention on my part shall be wanting to render the work by care, while passing through the press, creditable to its support.

I have the honor to be, Sir,

Your obedient servant,

GURUPRASAD ROY.

This letter was accompanied by certificates from various European Orientalists and Native Pundits in favour of the work. The Sub-Secretary stated, that the work had been brought to his notice by a learned Native friend, and one of the oldest members of the Society, who was also himself author of by far the most valuable Bengalee and English Dictionary which had yet appeared, Dewan Ramcomul Sen, and that desirous that the author of the *Sobda Ratnakar* should appear before the Society, with a

statement sufficiently definite as to the business part of the matter to enable it to consider his application at once, he had referred him to Dr. Hæberlin, who had kindly examined the work, whose opinion and letter on the subject was as follows:—

H. PIDDINGTON, Esq. *Sub-Secretary of the Asiatic Society.*

MY DEAR SIR,—I have examined the MSS. of the Sanscrit Dictionary in Bengali characters, compiled by Bâbû Guruprasad Roy, which you sent for my inspection; and I am of opinion that the work, if printed, would be of great use to Bengalee (Native) Students of Sanscrit, although in a critical point of view, and for European Scholars, its value can of course not be compared with Wilson's 2d edition. This Dictionary of Guruprasad's appears, however, to have been compiled with much care, and great labour has evidently been bestowed upon it. There are many more words in it than in Wilson's, and some really of importance; the explanations, too, are pretty full, and under each principal vocable all Sanscrit Synonymes are given in alphabetical order. Hence the work seems well adapted to Native (Bengali) Students, in as much they are accustomed to the mode observed in this work.

A similar work to this is in course of publication by R. Radhukanta, but the latter will fill 6 large 4to. volumes, and even then is not accessible to the public; and contains scarcely one-half of the vocables given in Guruprasad's; the former will when completed, be more for advanced scholars, the latter is adapted to students in general.

I think therefore, I might safely recommend the work in question to the favorable consideration of the Asiatic Society, not however for their adoption, but simply to assist the author in publishing the work. Indeed I think this belongs rather to the province of Government and the Council of Education, than the Asiatic Society. The Dictionary is not so much for the learned, as for the people of Bengal; it is for the educated Natives of this country, whether acquainted with English or not.

To print this Dictionary would require a considerable outlay. As far as I can judge, the work could not be sold under rupees 50, and if 150 copies were subscribed for by Government, the Council of Education, the School Book Society, and the Asiatic Society, there is no doubt that a Printer might be found to undertake the work. I hope something will be done towards the accomplishing of this object.

Believe me yours truly,

Calcutta, 8th May, 1841.

(Signed) J. HÆBERLIN.

The Vice-President then addressed the meeting, stating, that while there could be no doubt on the one hand that the work was likely to be one of very considerable utility to Bengalee Students of Sanscrit, it was on the other evidently not of that high classic order which the Society had been hitherto wont to patronize to a large extent. He therefore suggested, that the Society should subscribe for 25 copies (1,250 rupees,) and strongly recommend the work as an educational one to the attention of Government in that Department.

After some conversation, it was determined that it should be left to the Committee of Papers to settle the number of copies to be subscribed for, and to frame the recommendatory letter to Government on the part of the Society.

Read the following letter from Dr. W. Griffith, Acting Superintendent Honorable Company's Botanical Garden, which had been overlooked at the former meeting, from having slipped into the portfolios of drawings :—

No. 22.

From W. GRIFFITH, Esq. Officiating Superintendent of the Hon'ble Company's Botanical Garden, to H. TORRENS, Esq., Secretary to the Asiatic Society, dated 9th April, 1844.

SIR,—In obedience to instructions received from the Under-Secretary to the Government of Bengal,

Animals,	37	I have the pleasure of forwarding to you the Buchanan Manuscripts
Reptiles,	18	and Drawings, as per margin. I shall be obliged by your furnishing
Unfinished,	1	me with a receipt for the same. Amongst them will be found
Birds,	345	many copies substituted for originals, and also many duplicate copies
Fishes,	157	It appears to me that these, especially the last, may lead to the
Unfinished drawings apparently originals, ..	18	discovery of the manner in which so many of these drawings have
Copies of Birds made by Dr. Wallich,	22	been copied in General Hardwicke's Illustrations of Indian Zoology,
Ditto of Fishes made by ditto, several to be recognised in the illustration of Indian Zoology,	20	so far as I know, without any acknowledgment (except in the case of a few turtles) of the source whence they were derived,
Total,	607	and I am sure that the Asiatic Society will consider the object of its
Two volumes of Manuscript.		being the custos of these drawings in a great measure fulfilled,

if it is enabled to do justice to that very eminent person, the timely publication of whose labours, would have superseded to a great degree the labours of Messrs. Hodgson, Blyth and Jerdon.

I have the honor to be, Sir,

Your most obedient Servant,

Hon'ble Company's Botanic Garden, 9th April, 1844.

WILLIAM GRIFFITH,
Officiating Superintendent.

Dr. McGowan, of the American Missionary Hospital at Ningpo, presented an Inscription from a Tablet in a Buddhist Monastery at Ningpo, of which the characters, though supposed to be Buddhistical, were unknown to the learned in China, whether Natives or Europeans, and had been pronounced here as not being of any recognised form of the Thibetan. The Inscription was handed to the Editors of the Journal for early insertion.

Dr. McGowan also kindly offered to take charge of the impressions from the Ningpo bell, and to inform the Society if the remaining parts were worth the trouble of cleaning and taking off.

The following report was then read for the month of May Curator Museum Economic Geology.

REPORT OF THE CURATOR MUSEUM OF ECONOMIC GEOLOGY AND GEOLOGICAL AND MINERALOGICAL DEPARTMENTS, FOR THE MONTH OF MAY, 1844.

Our recommendation to Government, that the site of the Lithographic stones *Museum of Economic Geology.* covered by Captain Shortreed, as noticed in my reports of November and December last, has it would appear, been forwarded to the Honorable the Governor of the N. W. Provinces, and in reference to it, we have to place upon record, the following letter received from Captain Stewart, B. N. I., Fort Adjutant, Chunar:—

Copy, No. 462.

From J. THORNTON, Esq. Secretary to Government, N. W. P., to Captain STEWART, Fort Adjutant, Chunar.

SIR,—I am desired to forward to you the accompanying copy of a letter from the Secretary General Department, Asiatic Society regarding Lithographic stones, said to have been found near Rewah.

2d. The Lieutenant Governor has been given to understand, that you have been already engaged in inquiries regarding stones of this description in the neighbourhood of the Soane, and will feel glad if you can undertake to prosecute the search which Captain Shortreed has indicated. Any moderate sum which you may consider necessary to enable you successfully to conduct the inquiry, will be immediately placed at your disposal. I have, &c. &c. &c.

(Signed) J. THORNTON,

(True Copy,) *Secretary to Government, N. W. P.*

W. M. STEWART.

Agra, the 13th May, 1844.

To J. THORNTON, Esq. Secretary to the Government N. W. P., Agra.

SIR,—I have the honor to acknowledge the receipt of your letter No. 462 of 13th instant, forwarding for my information a copy of a letter from the Secretary of the Asiatic Society to the Secretary to Government of India, Home Department, regarding the possibility of obtaining supplies of stone fit for Lithographic purposes from the Rewah State, and communicating the wishes of the Lieut. Governor, that I should undertake to prosecute the search.

In reply, I have the honor to state, that I shall have great pleasure in meeting the wishes of the Lieut. Governor, and have no doubt from the discoveries already made, coupled with the information contained in Mr. Torrens's letter, of being able to accomplish the desired end.

I shall with his permission place myself in immediate communication with Mr. Torrens, forward for his inspection specimens of stones from situations where they have already been discovered, and obtain from him such further information as may enable me to follow up the discovery already made by Capt. Shortreed.

Specimens of genuine white lias, exactly corresponding in appearance with the best German stone, have already been procured from the bed of the Soane river, at a place situated between 50 and 60 miles S. W. of Chunar. The experiments made with them failed, owing to the softness and friable nature of the stones submitted for trial, which were unable to resist the pressure applied to them. They were however quarried from the surface, and as Mr. Torrens remarks that the best German stone is usually found with beds of inferior quality both above and below, I feel assured that a little expenditure in digging deeper will lead to the discovery of the proper kind.

I shall forward a contingent bill to you for the sanction of the Lieut. Governor, for any small expences that may be incurred in making the researches, and have to request, that you will

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cause directions to be forwarded to the Steam Agent at Chunar, to receive from me free of any charge for freight, any packages containing stones I may have to forward to Calcutta for experiment.

I have, &c. &c. &c.

(Signed) W. M. STEWART, *Captain,*

Chunar, 20th May, 1844.

Port Adjutant.

(True Copy.) W. M. STEWART.

To H. TORRENS, Esq. Secretary to the Asiatic Society, Calcutta.

DEAR SIR,—I have the pleasure to annex a copy of a letter to my address from the Secretary to the Government N. W. P., with my reply, dated 20th instant, by which you will observe, that I have undertaken to prosecute the search for Lithographic stone in Rewah, as suggested in your letter to the Secretary to the Government of India, Home Department, dated 14th March¹ last.

I have this day dispatched a party to the quarry in which white has already been discovered, with directions to cut right through the stratum from which the stone has hitherto been quarried to ascertain whether it may not be found of a closer and firmer texture underneath.

The experiments with this stone alluded to in my letter to Mr. Thornton, were made in the Lithographic press attached to the Office of the Sudder Board of Revenue N. W. P. then at Allahabad. They were quarried close to the surface, and as the experiments, although unsuccessful in obtaining a good impression, shewed that the stone was of the proper kind, I think it well worth while to search further before pronouncing it to be a failure.

I shall forward specimens of the stone to your address per Steamer as soon as I receive them, which will probably be in the course of a month. In the meantime I will be obliged by your obtaining from Captain Shortreed precise directions, whereby the locality from whence he obtained the specimens forwarded to you, may be correctly ascertained, I shall thus be able in the cold weather to follow up the discovery alluded to in your letter to Government, should the present experiment prove unsuccessful.

I have to request you will inform me under what official designation I may be able to correspond with you in the matter under discussion. "On the public service," I am not aware whether or not I can do so, as Secretary to the Asiatic Society. I remain, Dear Sir,

Chunar, 24th May, 1844.

Your's faithfully,

W. M. STEWART.

P.S.—I will thank you to forward me at your leisure a few small specimens of German stone of different kinds, to enable me to compare them with those found here.

We have replied to Captain Stewart, directing his attention also to any traces of organic remains which the formations in that locality might afford, and forwarding by dawk banghy specimens of German stone for comparison.

From Mr. Jas. Dodd, Assistant Assay Master, we have to acknowledge two very handsome specimens of the matrix of the Gold of the Real del Monte Mines, and two of Copper Ores from Cuba.

Major Alexander, B. A., has obliged us with a few specimens of copper ores and iron and pyrites, some of which will be of use as duplicates for exchanging, and one or two will find a place in our Cabinets. Capt. Goodwyn, B. E., has added to our library of reference by his valuable work on iron roofing, already noticed amongst the donations of books, but which should have its place in this report also, as being one day to become a text book for this important application of a mineral with which India so much abounds. It may not have been noticed, but it should be so, for

it is important as a step in Indian typography, that the numerous diagrams in this work are intercalated with the text as if they were wood cuts! though evidently lithographs, and of course far superior to type-metal cutting. Upon enquiry of Mr. Huttmann, of the Govt. Gazette Press, by whom the work is printed, he informs me that they *are* lithographs, and that they were so inserted by first printing off the sheet with the necessary blank spaces, and then sending the wet sheets to the lithographers who printed in their share. This arrangement is highly creditable to the contriver of it, and a most valuable hint to all who may like ourselves feel the absence of the art of wood-cutting, in illustrating papers relative to the arts or sciences.

For all the foregoing communications and presentations, the best thanks of the Society were voted.

Proceedings of the Asiatic Society for the month of JULY, 1844.

Wednesday Evening, 3rd JULY, 1844.

The stated Monthly Meeting of the Society was held at the Society's Rooms at half-past 8 p. m.

The following list of Books presented and purchased was read:—

Books received for the Meeting of the Asiatic Society, July 3, 1844.

The Penny Cyclopaedia, Vols. 25, 26 for 1843, and Vol. 27 for 1844.—Purchased.
Transactions of the Society of Arts, &c.—Presented by the Society.

The Edinburgh New Philosophical Journal for October 1842 to January 1844.—Presented by the Editor.

Estado de las Islas Filipinas, Vol. 2, 1844.—Presented by the Author.

Mémoire sur l'Idéographie, par Don Sinibaldo de Mas, Pamphlet.—Presented by the Author.

Vocabulaire l'Idéographique Français, &c. by D. D. Pamphlet.—Presented by D. D.
Sketch of the System of Education in Practice at Bruce-Castle School, Tottenham,
London.—Presented by Mr. H. Piddington on the part of the Proprietor.

The Oriental Christian Spectator.—Presented by the Publisher.

Calcutta Christian Observer for June 1844, 2 vols.—Presented by the Publisher.

Journal of the Agricultural and Horticultural Society of India.—Presented by the Society.

Journal Asiatique, for Sept. and October, 1843.—Presented by the Editors.

Journal des Savants, Nov. 1843.—Purchased.

The London, Edinburgh, and Dublin Philosophical Magazine, Nos. 154, 155 and 156.
—Presented by the Editor.

Proceedings of the Geological Society of London, Nos. 95 and 96.—Presented by the Society.

The Athenæum for April 6th, 13th, 20th and 27th.—Purchased.

The Meteorological Register for May 1844.—From the Surveyor General's Office.

Read the following letter from the Curator Museum of Economic Geology and Geological and Mineralogical Departments:—

H. TORRENS, Esq. Secretary, Asiatic Society, &c. &c. &c.

* Sir,—I beg to report for your information, that we have received from Government
but a part of our Indent for apparatus and re-agents for the use of the Museum of

Economic Geology, and that it will remain with the Society to consider how the remainder can be supplied.

In the accompanying lists, which comprise the articles still unprovided, the prices marked are European, converting, as our Calcutta Chemical dealers usually do, shillings into rupees.

The amount of the two lists herewith so calculated, is :—

But of this first, a part of the Indent can be reduced or dispensed with at present.

2. A part is probably not procurable here, except perhaps at a price which should not be paid unless the object was indispensably required.

3. A part may be obtained at lower prices, and a part I can present to the Laboratory from my own stock of apparatus and re-agents.

Altogether then, I should hope, that with a gradual outlay of at most Co.'s. Rs. 250, I shall be able to manage for a considerable time, but this outlay is really requisite because in a Laboratory the better it is furnished, the faster the work can be carried on; and the delays of preparing or even of purchasing apparatus or re-agents at the time when wanted, even if they are then obtainable, are most wasteful and discouraging.

I should not forget, Sir, to remind you, that of the Government allowance for contingencies of the Museum, whatever can be saved, I am applying gradually to the purchase of the necessary books, and that the Laboratory series both the Society's own departments of Geology and Mineralogy as well as the Museum of Economic Geology.

I am, Sir,

Your obedient Servant,

Calcutta, the 3rd July, 1844.

HENRY PIDDINGTON,

*Curator Museum Economic Geology,
and Geological and Mineralogical Department.*

Resolved.—That the necessary purchases for the Laboratory as explained in the lists accompanying the letter,* be authorized to the amount stated.

Read the following Letters from Messrs. W. and H. Allen and Co., the Society's Booksellers and Agents:—

HENRY PIDDINGTON, Esq. Assistant Secretary to the Asiatic Society.

SIR.—We have to acknowledge the receipt of your letter of the 17th February, enclosing letters for the Vice-Chancellors of the Universities of Oxford and Cambridge,

* Which it is not worth while to print.

and likewise for Trinity College, Dublin. They have been delivered, and we have acknowledgments for the same.

The "Britannia," has arrived, and the six cases of Books consigned to us by her, shall be delivered agreeable to the instructions contained in Mr. Torrens' letter on the subject.

We are, Sir,

London, 29th April, 1844.

Your faithful servants,

Wm. H. ALLEN & Co.

HENRY TORRENS, Esq. *V. P. and Secretary to the Asiatic Society of Bengal.*

SIR,—We have the honor to acknowledge the receipt of your esteemed favor, dated the 7th March, which reached us this morning.

We shall have much pleasure in making the arrangement you desire, with an eminent Sculptor, for the execution of a Bust of Bryan H. Hodgson, Esq. We shall make a point of seeing Mr. Hodgson soon after his arrival. You may assure the President and Members of your Society, that our best attention is at all times given to their commands. We shall address you again on the subject as soon as a Sculptor has been decided upon.

We are, Sir,

London, 6th May, 1844.

Your most obedient servants,

Wm. H. ALLEN & Co.

The Secretary stated, that as ordered at the last meeting, the Committee of Papers had been requested to decide on what number of copies of the Sobda Ratnakar, by Baboo Goropresad Roy, the Society should itself subscribe for while recommending the work to the favorable notice of Government, and that 25 copies had been determined upon by the Committee. It was finally *Resolved*, that as proposed at the previous meeting, the Society do subscribe as above, and strongly recommend the work to the attention of Government in the Education Department.

Read the following Letter from the Secretary to the Government of India, Secret Department:—

No. 430 of 1844.

From the Secretary to the Government of India, to the Secretary to the Asiatic Society, dated Fort William, the 29th June, 1844.

Foreign Department, Secret.

SIR,—By direction of the Governor General in Council, I have the honor to transmit to you, for such notice as the Society may deem it to merit, the enclosed copy of a report by Major F. Mackeson, C. B., on the Survey of the road from Sirsa to Bahawul-

pore, with remarks on the country traversed, the nature and capabilities of the road, and the effect its opening will have upon different channels of commerce.

I have the honor to be, Sir,

Your most obedient servant,

E. CURRIE,

Fort William,
the 29th June, 1844.

Secretary to the Government of India.

Read the following Draft of a Letter to be addressed to Government, soliciting its support for M. Callery's translation of the Great Encyclopedic Dictionary of Kang-Hi:—

To T. R. DAVIDSON, Esq. *Officiating Secretary to Government of India, Home Department.*

SIR,—I am directed by the Honorable the President of the Asiatic Society to request, that you will convey to the Right Honorable the Governor General and Council, the earnest recommendation of the Asiatic Society of Bengal, in favor of the Rev. Pere Callery of Macao, now engaged in a translation of the great Chinese Encyclopedic Dictionary of Kang-Hi.

2. An Extract from the Proceedings of the Society of the 6th December 1843, is entered marginally respecting the undertaking of this great work, and the support which the Society has itself endeavoured to afford to its able and energetic projector. I have also to request, that you will lay before the Right Honorable the Governor General, the accompanying Prospectus of the work, together with a specimen of the Typographical execution of, more particularly, the Chinese characters occurring in it. The Prospectus is published, it will be observed, in English as well as French.

3. Circumstances have occurred, occasioning a casual delay in making this recommendation; but the Society does not regret this, as the progress of events in China since it took up the intention of addressing Government in behalf of Mons. Callery, has more and more tended to prove the great and all-important advantages to be derived in the intercourse of Englishmen with the Chinese, from a critical knowledge of the niceties of their language, and an intimate acquaintance with their habits, customs and modes of thought.

4. The Society is of opinion, that the creation of a comprehensive book of reference, bearing upon the above heads, would be the truest and best mode of placing such advantages within the reach of Europeans, whom the course of business, or the spirit of enterprise, may lead to the shores of China; and it is by a correct and ample abstract translation of the great Chinese Encyclopedia, that the Society think such a book of reference may be best obtained.

5. It would be a source of infinite gratification to the Society, were it permitted to inform Mons. Callery, that the patronage and support of the Government of British India had been accorded to him; and should the Right Honorable the Governor

General think fit to go even beyond this, and draw the attention of the Home Authorities to the work in question, there is no doubt but that Mons. Callery will have obtained by this double act of kindness, a degree of support of the most valuable nature to his undertaking.

I have, &c.

H. TORRENS,

V. P. and Secretary, Asiatic Society.

Asiatic Society's Rooms, Calcutta, 4th July, 1844.

Read the following Letter from J. Owen, Esq. with the Prospectus to which it refers :—

H. TORRENS, Esq. Secretary of the Asiatic Society.

SIR—I have the honor to enclose the Prospectus of a little work nearly ready for the press, illustrative of the customs and habits of that portion of the Hill Tribes bordering on Assam, known as Nagas, drawn up at the suggestion of Major Francis Jenkins, and respectfully solicit the honor of the Society's name heading the subscription list.

Should this work pay its own expenses, I shall afterwards go on with a series describing each tribe separately.

Calcutta, 28th June 1844,

I have the honor to be, Sir,

Your most obedt. servant.

JOHN OWEN.

Extracts from Major Jenkins' Letter.

"From your position you have better opportunities of learning something of the habits, languages, and political divisions of that portion of this people on our N. E. frontier than any other Europeans.

"Should you be willing to adopt this suggestion, I would propose your drawing up a paper for presentation to the Asiatic Society, to whom it would be very acceptable, as it would be a valuable addition to our stock of information of the Border Tribes."

True Extracts,

Dated Sibpur, 1st February, 1842.

JOHN OWEN.

The Secretary was requested to place himself in communication with Mr. Owen, so as to enable the Society to form some judgment as to the merits of the proposed work.

Read the following Letter from Don Sinibaldo de Mas, in reference to the books named therein :—

Monsieur le Secretaire.

J'ai l'honneur de vous prier de vouloir bien soumettre à l'examen de l'académie dont vous dirigez les intéressants travaux l'essai ci-joint sur une des plus grandes questions qui puissent occuper l'intelligence humaine. Si je n'avais consulté que mes forces, je n'aurais pas appelé l'attention des corps savans sur un travail trop in-

complet qui ne contient que les premiers éléments d'un système, mais la nature même de la question que j'ai abordée me fait désirer que les idées fondamentales de mon essai soient examinées par des juges compétents.

J'ai aussi l'honneur de vous envoyer deux volumes que j'ai publié dernièrement sur les Isles Philipines. C'est un rapport officiel qui fut écrit pour le gouvernement espagnol.

Je vous prie de me croire, Monsieur, avec la plus haute considération.

Votre très humble serviteur.

Macao, 17 Mai de 1844.

SINIBALDO DE MAS.

The presentation was duly appreciated, and a suitable letter ordered to be addressed to the able authors of the works submitted.

Read the following Letter from the Royal Bavarian Academy of Munich :—

Translation of a German Letter from the Royal Bavarian Academy of Sciences at Munich, to the Asiatic Society of Bengal.

The Royal Bavarian Academy of Sciences at Munich being prompted by the ardent wish to extend their literary communications also to the Asiatic Society of Bengal, with which they have not hitherto been connected, have honored me with the privilege to express their sentiments with regard to this subject. I beg to assure you, that it is as desirable to the Royal Bavarian Academy to lay the results of their own labours before the eminent members of your Society, as to be acquainted, as soon as possible, with those researches, which are made by the Asiatic Society, for the reputation as well of their members, as for the advantage of Science; while the Royal Bavarian Academy of Sciences will not fail in acquainting you with their transactions by written communications of the Secretaries of the classes, by their Bulletins which form a part of their Journal, published under the title "Gelehrte Anzeigen," and by transmitting to you their Essays and their publications, they indulge in the hope to be honored with your communications, and consider an exchange of the larger Memoirs (the series of Dissertations in complete copies,) as especially desirable.

The Royal Bavarian Academy of Sciences would most gladly enter on such an exchange, and have thought proper to state the most convenient mode of their mutual intercourse in the Appendix.

I have the honor to be, &c.

(Signed) FREYBERG.

It was referred to the Committee of Papers to recommend to the Society, what would be in its opinion the best method of meeting the wishes of the Bavarian Academy.

Read the following Letter from Hugh Cumming, Esq. addressed to the Zoological Curator :—

80, *Gower Street, Bedford Square, London, January, 1844.*

MY DEAR SIR,—Having been informed by various of your scientific friends here, of your anxious desire of increasing the Museum of the Royal Asiatic Society, I have done myself the pleasure of forwarding by my nephew, Mr. Benson, a collection of land and fresh water Shells from the Philippine Islands, with their names, &c. collected by me there, and which I beg you will favour me by offering to the Society in my name, in exchange for other shells of India.

In the box there are 305 species and varieties, in duplicates and triplicates; to each belongs a number which refers to the accompanying list of names, localities and authors.

I presume from the high standing of the Society, that it has numerous benefactors from the gentlemen who fill the high offices under the Honorable Company, in the various parts of India, and its dependencies.

Although I have upwards of 11,000 species and varieties of Marine and Land Shells in my cabinet, I do not possess more than 10 or 12 species of land or fresh water shells that have been collected under the dominion of the Honorable East India Company.

If the Society have any duplicates of either land or fresh-water shells, which could be given to me in exchange, I should feel most obliged, and if the Society have but few species, it can make up to me in quantity in lieu of quality. I should also feel particularly obliged by the specimens being good and live ones. By this means I shall be able to make exchanges with my friends, with those which I shall not require for my own cabinet; for the collectors in England are very poor in true Indian land or fresh-water shells.

Should it lay in my power to assist the Society by further adding to its desiderata, I shall be most happy to do it.

At Mr. Reeve's request, I have sent the twelve first parts of his *Conchologia Iconica*, which work he began to publish last January, and as it is by far the most useful and complete work that has ever been published, and also executed in the first style; may I beg you to procure the Society's name, as a subscriber to it. The parts now sent can be kept, and the succeeding monthly parts can be received by the Society's bookseller in London. The money for those now sent can be paid by a bill on London.

Mr. George B. Sowerby, Junior, has also requested me to send his *Thesaurus Conchyliorum*, of which three parts have been published, and the fourth will be out on February 1st. I presume from the style of both works, that the Society will be much pleased with them. All the figures of both works are drawn and coloured by George B. Sowerby, Junior, and each of the works has been, and will be published in such a manner, as not to interfere for some years to come with each other. Each part is a complete monograph of the family figured, as far as known in Europe. These works will be most valuable to the Society's library, and a reference to all known shells.

Both Mr. Sowerby, Junior, and Mr. Reeve, requested the favour that you will be pleased to point out the utility, fidelity, and cheapness of the works. The Thesaurus can be kept, and ordered in the same manner as the Iconica.

In hopes that the Society will be pleased with the shells and the two works,

I remain, My dear Sir,

Your's truly,

HUGH CUMMING.

With reference to this proposal some conversation ensued. It was thought by some members, that generally, and as an usual practice, the system of private exchanges might be carried further than comported with the character of the Society, the objects of its institution, and the true interests of science, which might perhaps eventually be better served by sending, at all events in the first instance, duplicates of all kinds to the Honorable the Court of Directors, from which the Society receives such warm and liberal support,* and subsequently to all national and public establishments, both English and Foreign, the Society rather taking its chance as to returns, than as now contributing to enrich private cabinets. Nothing definite was, however, proposed, but the Rev. Dr. Hæberlin undertook to draft and submit his views on the subject, so that those of other members of the Committee of Papers might also be elicited, and perhaps some definite proposal be submitted to the body of the members on the subject, which it was allowed on all sides is one of very great importance.

A curious dulcimer used by the Arracanese, was presented by W. Peacock, Esq. which excited much attention.

REPORT OF THE CURATOR OF MUSEUM ECONOMIC GEOLOGY, AND GEOLOGICAL
AND MINERALOGICAL DEPARTMENTS, FOR THE MONTH OF JUNE 1844.

I should perhaps commence my report of this month by saying, that we have received from Government the following letter in relation to an indent made upon the H. C's Dispensary, and with it the articles allowed by Government.

* See also Proceedings for April 1841, No. 109, Vol. x. p. 64 and 66 at the bottom.

No. 1456.

From Under-Secretary to the Government of Bengal, to the Vice President and Secretary of the Asiatic Society, dated Fort William, 3rd June, 1844.

SIR,—I am directed to acknowledge the receipt of your letter, dated the 20th March last, submitting an indent for Chemical Apparatus and Re-agents, required for the Laboratory of the Museum of Economic Geology.

2. In reply, I am directed to state, that the Deputy Governor of Bengal having consulted the Medical Board, they have been pleased to comply with the indent to the extent shewn in the accompanying list, which specifies the articles and the quantities of them available in the Dispensary for the purpose in question.

I have the honor to be, Sir,

Your most obedient servant,

A. TURNBULL,

Under-Secy. to the Govt. of Bengal.

Without entering into details which would not interest the meeting, I may say, that we have now, with what we had before purchased and provided in various ways, about two-thirds of what is required, so far to furnish our Laboratory, that generally speaking, its operations can go on when required without the loss of time and imperfection of research which arise from a deficiently provided one; and for the remaining third, which is fortunately the least expensive one, we shall be enabled I hope to supply it from the European shops and Bazars, so, as at no great cost to the Society, to avoid the loss of time and labour which the preparation of our own re-agents and apparatus entails.* It may not be out of place here to say, for it may a little enlighten many who have no conception of the difficulties attending chemical research in India, that I have recently found that it is impossible to procure even so common an article as chemically pure Carbonate of Soda in Calcutta! None of the shops having any but the common pharmacopeial drug, which always contains a little sulphate or muriate, or both. Professor O'Shaughnessy informs me, that he has also failed in finding any.

Geological and Mineralogical.—We have received from Captain Newbold, M. N. I. a valuable paper, being a "Note on a recent Fresh-water Deposit," with a few remarks on the origin and age of the Kunkur of the South of India, and supposed decrease of thermal temperature, which throws much light on the origin of this curious mineral, at least in that quarter; and it is hoped, that Captain N., with his known activity of research, will not lose sight of this subject, forming as it does, one of the great problems of Indian Geology. The paper should have early insertion in our Journal.

* See letter and resolution at p. lxiu and lxiv.

14. Sixty-eight spare Nos. of the Asiatic Journal for the years 1833, Nos. 12; 1834, Nos. 10; 1837, Nos. 6; 1838, Nos. 9; 1840, Nos. 12; 1841, Nos. 12; 1842, Nos. 12; 1843, Nos. 3.—Presented by John Marshman, Esq.
15. Lardner's Cabinet Cyclopædia, on Electricity, Vol. II.—Purchased.
16. Ayeen Akbery, or the Institutes of the Emperor Akber, Vol. II.—Presented by F. S. Owen, Esq.
17. General Register of the Bengal Civil Service, from 1790 to 1844.—Presented by the Author.
18. The Dabistan, or School of Manners, Translated by Shea and Troyer, 3 Vols.—From the Oriental Translation Committee.
19. Ibn Khalikan's Biographical Dictionary, translated by McGlekin de Slane, 2d Vol. From the Oriental Translation Committee.

In reference to the donation of 68 spare numbers by Mr. Marshman, the Sub-Secretary stated, that he had been fortunately enabled to supply that gentleman with one of the early numbers to complete his set, but that as these numbers were often inquired for and very scarce, though many, no doubt, might be in existence; it would be desirable to make it known that the Society would be thankful for all spare and odd copies of the Journal which might be scattered about in private hands,* and would in exchange be happy to assist in completing volumes.

Read the following letter from Messrs. W. and H. Allen and Co. the Society's London agents:—

H. TORRENS, *Esq. Vice President and Secretary to the Asiatic Society of Bengal.*

SIR,—The six cases of Books consigned to our care by the "Britannia," have been duly received and forwarded to their respective addresses. The duty and other expenses on the Books will be repaid to us by the institutions receiving them. We have the pleasure to enclose you receipts for the cases.

The Heads of Trinity College, Dublin, have intimated their wish to send your Society a case of books in return for those received from you. We have offered our services in forwarding them to India.

Nothing has yet been heard of the "Earl of Hardwicke."

We have the honor to be, Sir,

Your faithful servants,

London, 31st May, 1844.

W.M. H. ALLEN and Co.

And the following from his Grace the Lord Primate of Ireland, Chancellor of Trinity College, Dublin.

H. TORRENS, *Esq.*

SIR,—I beg to acknowledge the receipt of your letter accompanied with a case of books from the Asiatic Society for the Library of Trinity College, Dublin, and I am requested, by the Provost and Fellows of the College, to express their thanks to the

* As in the Mofussil, whence we should be happy to pay the banghy-postage, particularly for early numbers.

Asiatic Society for this valuable and acceptable present. I am also requested to inform you, that the Heads of the University assent with pleasure to the proposal of the Asiatic Society relative to a reciprocal presentation of recent publications. An order has, in consequence, been given to their booksellers to prepare a box of books lately issued from the University Press, for immediate transmission to London, to be thence forwarded to the Society. It will contain the eleven volumes of Archbishop Usher's works already republished, and some other works. As soon as the new edition of the Archbishop's works shall be completed, another box of books will be forwarded.

I am, Sir,

With much respect, your obedient servant,
JOHN G. ARMAGH.

London, 13th May, 1844.

From M. de Villemain, Ministre, de l' Instruction Publique à Paris.

Monsieur, — J'ai reçu la lettre que vous m'avez fait l'honneur de m'écrire pour m'informer de l'envoi que vous a fait la Société Asiatique de Calcutta, d'une caisse de livres orientaux qui vous paraîtraient destinés à être offerts au gouvernement Français.

Je vous prie, Monsieur, de vouloir bien m'addresser ces livres à Paris, par la voie que vous jugerez la plus convenable, en ayant soin de faire suivre les frais qui résulteront de cet envoi et que j'aurai soin de faire acquitter aussitôt que les livres me seront parvenus.

Recevez, Monsieur, l'assurance de ma considération distinguée.

Le Pair de France.

Ministre de l'Instruction Publique,

Paris, le 18 Mai, 1844.

Signature

VILLEMAIN.

A Monsieur Allen, libraire de la Compagnie des Indes Orientales, à Londres.

Official receipts for similar dispatches of books were also enclosed by Messrs. Allen and Co. from the Very Reverend the Vice Chancellors of the University of Oxford and University of Cambridge, the Prussian Consul General, and the Consul General of the Netherlands.

Read the following letter addressed to the Society by W. Prinsep, Esq.

H. TORRENS, Esq., *Secretary to the Asiatic Society, Calcutta.*

SIR,—With reference to the orders received from you, as a Member of both the Committees for procuring the portraits of Sir Ed. Ryan and of H. T. Prinsep, Esq., I beg leave to advise you, that being without any remittance for the purpose of paying to the artists the first half of their demand, which is the invariable custom, I have recommended to Sir Ed. Ryan and my brother the course they have adopted this day, and I have now to request that you will meet with due honor, a bill drawn at 10 days' sight in favor of Messrs. Roberts, Mitchell and Co. for Co's. Rs. 1,142-13-8, being the equivalent of £100 negotiated at 1-9, the exchange of the day. The bill is signed by Sir Ed. Ryan, H. T. Prinsep and myself, and you can appropriate the half to each fund in your hands, as we shall here pay £50 to each artist on account. I am happy to say, that the likenesses of each promise to be excellent. I trust you will at once remit the remainder of each fund, so as to enable me to complete the arrangements and provide proper frames and packing cases for them.

I remain, Sir,

Your most obedient servant,

W. PRINSEP.

London, 7th June, 1844.

The Secretary stated that the bill had been duly honoured, and read also parts of a private communication from Mr. Prinsep, stating that the Society might have casts of the marble busts now executing of Mr. H. T. Prinsep and Sir Charles Metcalfe for £5 each, which was gladly sanctioned.

W. PRINSEP, Esq., care of Messrs. RICKARDS, LITTLE AND CO. of Bishop's Gate Street, London.

Sir,—I have the honor, by desire of the Asiatic Society of Bengal, to acknowledge the receipt of your letter dated London the 7th June last, advising a bill of exchange in favour of Messrs. Roberts, Mitchell and Co, for Co's. Rs. 1,142-13-8, being the equivalent of £100, exchange at 1-9 per rupee, for the advance paid by you to the artists for the portraits of Sir Edward Ryan and H. T. Prinsep, Esq., which you are empowered to procure. The bill was presented on the 23rd ultimo, and paid to Messrs. Carr, Tagore and Co. on the 5th instant, to whom it was made payable by the drawers.

The balance of the subscriptions for the portraits will be remitted to you by an early opportunity, and I am requested to express the satisfaction of the Society that the likenesses promise to be excellent.

I am, &c.,

Calcutta, Asiatic Society's Rooms, the 13th August, 1844.

H. TORRENS.

Read the following letter in reply to the Society's recommendation of M. Callery's translation:—

No. 386.

From T. R. DAVIDSON, Esq. Officiating Secretary to the Government of India, to H. TORRENS, Esq. Vice President and Secretary Asiatic Society, dated the 20th July, 1844.

Home Department.

Sir,—I am directed by the Governor General in Council to acknowledge the receipt of your letter dated 4th instant, and to state in reply, that the Government of India has already subscribed for 15 copies of Monsr. Callery's translation of the Chinese Encycloœdia of the Emperor Kang-hi.

I have the honor to be, Sir,

Your most obedient servant,

T. R. DAVIDSON,

Officiating Secretary to the Government of India.

Council Chamber, the 20th July, 1844.

Read the following letters from the Officiating Secretary to Government of India, and the Secretary Public Department, Fort St. George:—

No. 383.

From T. R. DAVIDSON, Esq. Officiating Secretary to the Government of India, to H. TORRENS, Esq. Secretary Asiatic Society, dated the 20th July, 1844.

Home Department.

Sir,—In compliance with the request of the Government of Fort St. George, I am directed to forward herewith for the use of the Society, a copy of the Meteorological Observations recently published at Madras.

I have the honor to be, Sir,

Your most obedient servant,

T. R. DAVIDSON,

Officiating Secretary to the Government of India.

Council Chamber, the 20th July, 1844.

To the Managing Committee of the Literary Society at Calcutta.

Public Department.

GENTLEMEN,—I am directed by the Most Noble the Governor in Council, to transmit to you the accompanying copy of the 6th volume of the Madras Astronomical observations, recently published at this Presidency.

I have the honor to be, Gentlemen,

Your most obedient servant

Fort St. George, 29th June, 1844.

ent servant,
J. F. Thomas

J. F. THOMAS,
Secretary to Government

Read the following letters from the Secretary to the Superintendent of Marine, and Under-Secretary to the Government of Bengal:—

No. 492

To H. TORRENS, Esq., Secretary to the Asiatic Society.

SIR.—I have the honor, by direction of the Acting Superintendent of Marine, to forward to you the accompanying copy of a letter No. 1147, dated the 29th April last, from the Under-Secretary to the Government of Bengal, together with copies of the Tidal Registers which accompanied it.

I have the honor to be, Sir,

Your most obedient servant,

*Fort William, Marine Superintendent's Office,
the 30th July, 1844.*

J. SUTHERLAND,
Secretary.

No. 1147.

*From Under-Secretary to the Government of Bengal, to Lieut. Col. A. IRVINE,
C. B. Acting Superintendent of Marine, dated Fort William 29th April, 1841.*

Marine.

Sr.—I am directed to transmit to you, for information and record, the accompanying Tidal Registers, kept at Singapore during the months of June, July, August, September and October, 1842, and to request that copies thereof may be forwarded to the Asiatic Society.

I have, &c.,

(Signed) CECIL BEADON,

(True Copy.) *Under-Secretary to the Govt. of Bengal.*

Fort William, Marine Superintendent's Office, the 30th July, 1844. J. SUTHERLAND, *Secretary.*

Read the following paper

India, Foreign Department:—
No. 1542 of 1844.

den Secretary to t

Secretary to the Asiatic Society, dated Fort William, the 6th July, 1844.

Foreign Department.

SIR.—By direction of the Governor General in Council, I have the honor to transmit to you, for such notice as the Society may deem it to merit, the accompanying copy of

a report by Lieut. Cruttenden, Assistant Political Agent at Aden, on the Mijjertheyn tribe of Somallees, inhabiting the district forming the North-east point of Africa.

I have the honor to be, Sir,

Your most obedient servant,

Fort William, the 6th July, 1844.

W. EDWARDS,
Under-Secretary to the Govt. of India.

This valuable paper was referred to the Editors of the Journal for early publication.

Read a letter from Mrs. Greenlaw, widow of the late C. B. Greenlaw, Esq. presenting to the Society a handsome model of the Steamer *Enterprise* (the first steamer which came round the Cape*) carved from a piece of her keel.

Read the following letter from Dr. Wallich, Superintendent H. C. Botanical Garden, accompanying the splendid donation to which it refers :—

To H. TORRENS, Esq.

MY DEAR SIR,—Will you do me the favour to present to the Asiatic Society, at their next meeting, a tolerably good skull of the Hippopotamus. It was the best I could procure at the Cape. I brought it with me from thence about a month ago, and Mr. Blyth was put in possession of it soon after my arrival.

In case the Society should think that I could be of service in procuring objects of Natural History from South Africa, I should be happy to assist in the best way I could.

I have the honor to remain,

My Dear Sir,

Your sincerely,

N. WALLICH.

Botanic Garden, 31st July, 1844.

Read the following note from the Revd. Dr. Häberlin on the reference which had been made to him of the letter from the Royal Bavarian Academy of Munich :—

Memo.—The “Royal Bavarian Academy of Sciences” at Munich, has for the comparatively short period of its existence acquired a great renown for its scientific researches, which include oriental studies, and deserves, therefore, the acknowledgment of the Asiatic Society of Bengal. Having been honored by the Academy with the proposal of an interchange of our respective publications, it appears to me highly desirable for our Society, and it is to be hoped mutually advantageous, to accede to the proposal.

* In 1826.

Dr. Von Martius (in his letter,) states, that only certain parts of our Journal were accessible to the Academy. These parts being lodged in the Royal Library at Munich.

I am of opinion, and would accordingly recommend, that in token of our readiness to enter into the proposed intercommunication, we send at once (instead of completing the volumes in the Royal Library,) a complete copy of our Journal from the commencement, and engage to continue the same, as well as a copy of Researches hereafter to be published by us. At the same time, I think we should express our desire to be favored in return with all the publications of the Academy.

J. HÄGERLIN.

Calcutta, 23d July, 1844.

The Secretary remarked, that it would be very difficult now to supply a complete set of the Journal, as the early volumes were very scarce; and after some conversation it was resolved, that as complete a copy as could be obtained of the Journal, should be forwarded to the Bavarian Academy.

Read a letter from the Société Géologique de France, expressing a wish to receive the Society's Journal, and to correspond with it.

The Secretary stated, that only two volumes of the Journal of this Society's Proceedings, vols. 1835 to 1837 had been received, and he proposed to write to them, stating this, and requesting to know what volumes it had received of the Journal, so that the two Societies might renew their very desirable exchange of works, without the chance of sending duplicates.

Read the following letter from the Rev. Mr. Mack, Serampore College, who had kindly sent the two coins to which it refers for the Society's inspection:—

MY DEAR SIR,—The coins (one gold, and the other silver,) which were dug up in the Soonderbuns, and belong to Serampore College, will be found, I believe, to agree very closely with some of those which have been figured by Mr. Prinsep.

The gold coin was dug up on the estate lately belonging to Serampore College about the year 1835; the other was obtained about the same time, but whether from that estate or one adjoining, I cannot tell. The estate belongs to that part of the Soonderbuns on which there are few or no Soondery trees, which is not Virgin Forest, but has innumerable trees of former inhabitants. Amongst other things we found a potter's kiln, that is, a mass of little lamps or churags, and similar saucer-like dishes, which had evidently never been moved from the kiln. They were much superior to the ordinary manufacture of similar articles of the present day. The material was fine, and the surface perfectly clean and smooth, although they had lain so long in the salt soil. They appeared to me of much the same consistence as the fine

tiles and bricks I have seen in the old temples of Assam, which the present inhabitants of the province cannot imitate.

I remain,

Serampore, 6th June, 1844.

Your's faithfully,

JOHN MACK.

P.S.—My friend, Mr. Bonnau, will oblige me by taking the coins to the Asiatic Society's Museum for you, and I shall feel obliged by their early return and the fruits of your examination of them.

The locality in which these coins were found excited much speculation; and it was agreed, that if not already published, they should be lithographed for the Journal.

Read the following letter from S. G. T. Heatly, Esq. with the specimen sheets of the work referred to.

II. TORRENS, *Esq.*

MY DEAR SIR,—I request your good offices with the Asiatic Society to obtain its permission, that I may inscribe a volume on mathematical analysis now passing through the press, with its name.

It is not ordinarily that Societies are the object of dedications, but you can appreciate the feeling which (a humble member of it,) I wish to express for the labours of the oldest scientific association in India, and nearly the only one.

The book is entitled the "Theory of Functions." I undertook it some years ago to combine into one homogeneous body, all our knowledge in that department; since then the later labours of Canchy, Lionville, Hamilton and De Morgan, working in separate veins have illustrated so many obscure points, and developed connexion between subjects apparently so dissimilar, that I resolved to commence a second edition, without publishing the first; nor has the lately completed volume of Professor De Morgan done much in the peculiar field which I have marked for my labours, unequalled though that volume be in English mathematical literature for its extent of matter, rigour of demonstration, and clearness of language.

My "Theory of Functions" will be adapted to the purposes of mathematical education, and containing all the important results of modern analysis, especially those which are essential in the pursuits of physical science.

A few pages of the first edition will enable you to judge of the work.

Your's sincerely,

August 6, 1844.

J. G. F. HEATLY.

The Secretary was desired to express to Mr. Heatly, that the Society would feel much gratified by his proposed dedication, and that it would look forward with pleasure to the appearance of a work of this high order in India.

Read the following letter from Capt. H. L. Bigge, 1st Assistant to the Commissioner of Assam. The curiosities to which it refers were on the table.

To H. PIDDINGTON, Esq., *Asiatic Society.*

MY DEAR SIR,—I have the pleasure to send a few curiosities from China, which, if you think them worthy the notice of the Members, you will oblige me by putting on the table for the Meeting this evening.

1 Chinese Pistol, 3-barrelled.	4 Anatomical Drawings.
1 Cross Bow, ditto.	1 Chinese Tea Urn
1 Pipe, 2 Lamps, and 1 Seal.	Mineralogical Specimens.
1 Deer's Head, (Chusan.)	1 Model of Door Latches.

Yours sincerely,
H. L. BIGGE.

No. 41, Park Street.

The Secretary stated, that having written to Mr. Secretary Edwards for the map accompanying Major Mackeson's route to Sirsa and Bahawulpore, of which the report had been sent to the Society for publication by Government, and was now at Press, he had been informed that the map was now printing at the Government Lithographic Press, and that the Society could be supplied with copies; in return for which, he had offered to Government such number of the printed report as it might require, so that the utility of the map would be much increased by distributing the printed report with it.

He also stated, that Raja Kalce Krishna Bahadoor had sent to the Sub-Secretary for perusal, a private letter from M. Garçin de Tassy, thanking the Raja for having sent him a very rare and valuable Persian MSS. of the Atesch Kada, of which an account had been published in the last No. of the *Journal of the Royal Asiatic Society of London*, by Mr. Bland.

Upon enquiry, he regretted to say, that the Raja had not preserved a copy before sending it, and he requested to be authorised to procure one, if possible, for the Society's Library, which was sanctioned.

J. Owen, Esq. of Assam, presented in addition to his kind donation of the Ayeen Akberry, two balls of the opium-rags as prepared by the ryots of Assam, for sale and common consumption.

These are small, long, strips of narrow rags, on which the fresh opium being collected from the poppy head is smeared, and the whole rolled up into a ball about the size of a small hen's egg, and carried about for daily use,

or sold as merchandise in all the bazars. Opium was stated to be the most profitable crop raised by the cultivators.

An engraved proof portrait of Rammohun Roy was presented by the Sub-Secretary, and it was suggested that the Society might, with great propriety, as occasion offered, collect such portraits of remarkable individuals, whether Natives or Europeans, who have distinguished themselves in literature or science in India, and more especially of such as have also been Members of the Society.

The Secretary announced with deep regret to the Society, the death of an old and highly-talented associate, and formerly a valuable servant of the Society, Dewan Ramcomul Sen, a gentleman not less distinguished for his great attainments, his enlightened views, his steady attachment to the cause of education, and his untiring energy and industry in every good and useful work, by which the community, Native or European, could be benefited, than by his modest, and even retiring character, and extensive charity.

The friend and correspondent of Mr. Colebrooke, Professor Wilson, Mr. W. B. Bailey, and many other gentlemen formerly connected with India ; he was known in Europe as here, as one possessing not only great acquirements in the literature of his country, but an ardent desire to see its children regain their ancient place amongst the families of the human race ; and towards this noble end, for a whole life were his strenuous endeavours directed. Perhaps indeed with too much zeal ; for there is reason to believe, that he fell a sacrifice to over-exertion in study, superadded to the labours which his highly responsible situation of Dewan of the Bank of Bengal necessarily imposed upon him.

The Honorable the President proposed, and it was agreed to *nem diss.* that a letter of condolence, expressing the deep regret of the Society, should be addressed to his family.

The following letter was in consequence addressed to Baboo Hurreemohun Sen, the son of the deceased, and is inserted here for the sake of connection :—

TO BABOO HURREEMOHUN SEN.

Sir,—I am desired by the Honorable the President and Members of the Asiatic Society to convey to you, and to request, that you will express to the other members of

the family of your late father, the deep and unfeigned regret with which the Society has learnt his decease.

They cannot, Sir, on such an occasion refrain from testifying to you and his relatives and friends, the high esteem which his literary acquirements, his steady advocacy of the cause of native education, his many private and public virtues, and his long and valuable services to the Society had won for him from its Members, and from every friend to literature and science both in India and in Europe, to whom he was known; nor will the Society cease to cherish his name, and to deplore his loss, as one of the most distinguished and most deeply lamented of their associates.

I am, &c.

Museum, 9th August, 1844.

(Signed) H. TORRENS,
V. P. and Secretary Asiatic Society.

Read the following Report from the Curator of Museum Economic Geology, &c. &c.

REPORT OF THE CURATOR MUSEUM ECONOMIC GEOLOGY AND GEOLOGICAL AND MINERALOGICAL DEPARTMENTS, FOR THE MONTH OF JULY.

We received sometime ago from our zealous contributor, Captain Newbold, for the *Geological and Mineralogical* Museum of Economic Geology,* a remarkable red sandstone rock, from the junction of the diamond limestone and sandstone near Kurnool. This I have been occupied with, and though the results are of no great interest, they may be worth placing on record to save the labour of others, who like Captain Newbold and myself, may be struck with its appearance and remarkable smell when fresh fractured. The paper being merely chemical, would barely interest the Meeting, but may be thought worthy of insertion in the Journal.

From Dr. Spilsbury, who I rejoice to say, has kindly promised us to continue his well-known and indefatigable services, we have received five specimens of the slaty sandstone of Bundlecund, with the dendritic impressions which are now considered to be metallic, and not, as formerly, vegetable. "The locality from which these are obtained," says Dr. Spilsbury, "is Miswangso, about nine miles North of Saugor, on the high road to Jhansee and Gwalior, where it is extensively quarried for building purposes. You will observe, it varies from almost white down to brick red."

Dr. Spilsbury also announces, that he has collected specimens of the fine coal of Lameta on the Nurbudda, close to Jubbulpore, which will be soon forwarded.

Lieut. Sherwill of the Revenue Survey Department, has forwarded to us specimens of the *Economic Geology* of the Sitajeet of Behar. The following is the extract from his letter:—

"By to-day's dak banghy, I have despatched several specimens to your address, of a substance called by the natives Sitajeet. It is procurable in small quantities from a range of very curious formed granite hills on the borders of the Palamow Forest, not far from the Sone river. It is found high up in the rocks in small whitish globules, is scarce, and much sought after by the natives, who with great difficulty

* We are indebted to Captain Newbold for several other contributions, but as they require examination, I have not yet been able to bring them forward.

not unattended with danger, gather it towards the end of the cold weather. It is valued as a great restorative and aphrodisiac. On the table land of Rhotasgurh I have seen it on the face of the great mural precipices, wearing the appearance of tar or pitch, or oozing from the sandstone,* but being far beyond the reach of man, it may or may not be this substance. The natives declared it is the *Sitajeet*. You will perceive mine has a strong taste of alum.

Lieut. Sherwill's specimen is on the table, and is a black aluminous shale, with an acid efflorescence of alum, contaminated with a little iron. If abundant and accessible, and with plenty of fuel at command, no doubt alum might be advantageously manufactured from it. Perhaps even by solar evaporation only? The aluminous efflorescence answers in many of its chemical characters to the *Sitajeet* described, and analysed by Mr. Stephenson in Vol. II. p. 321 of the Journal, but ours gives a light cloud with nitrate of silver from the excess of sulphuric acid, and the same with oxalate of ammonia, shewing, that it may contain a little lime. I also used ammonia to precipitate the alumina in the gelatinous form. Heated in a platina spoon it melts and boils up into a round dull greyish white bubble, which remains solid at a strong heat between the forceps; moistened with nitrate of Cobalt it gives the usual blue colour.

The description Lieut. Sherwill gives of the tar-like appearance of some of the exudations, much reminds us of Buchanan's description of that which he visited at Tapoban in the Rajagriha Hills in Behar. At page 255, Vol. I., of Martin's edition, he thus describes the substance itself, after the detail of the locality and the manner in which an old man of the Musahar tribe collected it before him.

"When fresh from the rock, *Sitajeet* is of a dirty earth colour, and is always mixed with impurities, that crumble into it from the precipice above. It is then about the consistence of new honey, and has a strong rather disagreeable smell, although it cannot be called very offensive. When kept in a bottle with a glass stopper for some months, it acquires a deeper brown colour, and becomes thicker; and exposed to the air, it may soon be made into pills. It seems to be very different from a substance which, in Nepal, is called by the same name. From the hot springs in the vicinity, and the heat of the cave below, I suspect that it exudes from the action of subterraneous fire. The natives pretend that monkies eat it, and attribute the small quantity procured to their depredations; but I think that the circumstance is doubtful, and have no doubt, that, with care and a ladder, several pounds might be procured, should it be found useful; but it owes its celebrity among the natives to its being supposed to possess the imaginary quality of an aphrodisiac. When placed on burning charcoal, it swells a little and smokes, and when heated red, is reduced to white ashes without emitting flame. It cannot I presume, therefore, be considered as a bituminous or inflammable substance, the only class of minerals to which it has any resemblance.

* This may be Mineral tar and an indication of the presence of Asphalte. I wrote to Lieut. S., requesting him to look for this mineral, of which I sent him also a specimen.

Proceedings of the Asiatic Society for the month of SEPTEMBER, 1844.

The usual Monthly Meeting was held at the Society's rooms on Wednesday evening the 4th September, H. Torrens, Esq. Vice President and Secretary in the Chair.

Captain W. L. Mackintosh, B. N. I. proposed at the last Meeting, was ballotted for, and being declared duly elected, the usual communication was ordered to be made to him.

The following gentlemen were proposed as Members :—

J. Owen, Esq.—proposed by H. Torrens, Esq. Vice President, seconded by H. Piddington, Esq.

A. C. Barwell, Esq. C. S.—proposed by H. Torrens, Esq. Vice President, seconded by Lieut. Colonel Forbes.

As Correspondning Member,—Dr. McGowan, Medical Hospital, Ningpo,—proposed by the Revd. J. Long, seconded by S. G. T. Heatley, Esq.

The following list of books presented was read :—

1. The Meteorological Register for July 1844.—From the Surveyor General's Office.

2. Athenæum for June the 8th, 15th, 22nd, and 29th, 1844.—From the Editor.

3. The Calcutta Christian Observer for September, 1844.—By the Editors.

4. The Oriental Christian Spectator for August, 1844.—By the Editor.

5. Proceedings of the Botanical Society of London, Vol. 1, part 1.—By the Society.

6. Proceedings of the Royal Irish Academy for the year 1841-2, part 6th.—By the Society.

7. Proceedings of the Royal Society of Edinburgh for December 1841 and January 1842, Nos. 10 and 20.—By the Society.

8. Annuaire du Bureau des Longitudes 1844.—By the Bureau.

9. Connaissance des Temps, avec additions 1843, 1844 and 1845.—By the Bureau.

10. Transactions of the Royal Society of Edinburgh, vol. 15th, part 2nd.—By the Society.

11. Memoires de la Societe de Physique et d'Histoire Naturelle de Geneve, 1841-2.—By the Society.

12. Transactions of the Royal Irish Academy, vol. 19, part 2nd, 1843.—By the Society.

With reference to the presentation of the volumes by the Royal Irish Academy, it was ordered that the Journal of the Society should be sent to them, and that the Librarian should be requested to ascertain and report if any reciprocation had formerly taken place.

Read the following Circular, with the accompanying letters and resolutions of the Committee of Papers :—

No. 1.—The Secretary with reference to the annexed resignation of the Honorable the President, requests the attendance of Members of the Committee of Papers at a special meeting, to be holden at the rooms on Tuesday morning the 3rd September 1844, at half past 10 A. M.

H. PIDDINGTON,

30th August, 1844.

Sub-Secretary.

No. 2.—To H. W. TORRENS, Esq. *Secretary Asiatic Society.*

Sir,—Being on the eve of my departure from India, I beg leave to place in your hands my resignation of the office of President of the Asiatic Society, and to request, that in laying it before the Committee of Papers for communication to the next general meeting, you will be so kind as to express my sincere thanks for the gratification which my connexion with it has always afforded me, and my best wishes for the success of its labors, and the continuance of its credit and celebrity throughout the scientific world.

I have the honor to be, Sir,

Calcutta, August 20, 1844.

Your most obedient humble servant,

W. W. BIRD.

No. 3.—At a Meeting of the Committee of Papers held at the Society's rooms on Tuesday the 3rd September, at half-past 10 A. M.

Present:—Lieutenant Colonel Forbes; Charles Huffnagle, Esq.; Rev. J. Hæberlin; F. G. S. Heatley, Esq.; Lieutenant A. Broome, B. A.; H. Torrens, Esq. Vice President and Secretary,

Resolved.—That it be proposed to the Society at the meeting, that measures be taken to ascertain whether the Right Honorable the Governor General would be inclined to take the office of President.

2. That it be also suggested to the Society, that the Honorable Mr. Bird, our late President, be requested to sit for his Picture on his arrival in England, in order that it may be placed in the room of Meeting, as a memento of the gratitude of the Society to him, for his steady and valuable maintenance and support of its interests in all respects, both as President and as Member during thirty-three years.

3. That it be also recommended to the Society, that the charge for the Portrait be put to the head of charges general.

H. TORRENS, Vice President and Secretary.

After some discussion, the recommendations of the Committee of Papers were adopted.

Read the following letters and statements of Accounts from Messrs. Allen and Co. the Society's London Agents and Booksellers, with reply to them from the Secretary:—

HENRY TORRENS, Esq. *Secretary to the Asiatic Society of Bengal.*

Sir,—We have the pleasure to hand you herewith our account current with the Society for the year ending the 30th June last. The balance is £51 ; 12 : 9 in favor

of the Society. This amount we propose to retain in part payment for the bust of Mr. B. H. Hodgson, which you have commissioned us to get executed. In the event of your wishing the accounts kept separately, we shall be happy to honor your draft, at 3 months' sight, for the balance now stated to you. We shall then draw upon the Society, as we were instructed, for whatever we may pay, on account of the bust.

Dr. Busch of Bremen, has written us to say, that he has consigned a box of shells to our care for the Society, and we are requested to forward the same to Calcutta, as soon as it reaches us. This we shall attend to. In our next letter we shall be able to say how the box has been forwarded.

We have the honor to be, Sir,

Your most obedient servants,

London, July 2nd, 1844.

Wm. H. ALLEN AND CO.

Dr. . . . *The Asiatic Society, Calcutta, in Account with Wm. H. Allen and Co. Cr.*

		On hand June 30, 1843	Recd. since.	On hand June 29, 1844.	Sold.	Per Copy.	
Asiatic Researches. vol. 15, 4to. sewed, ..	19	0	19	0	24	0	0 0 0
Ditto, vol. 16,	9	0	8	1	0	1 4 0	
Ditto, vol. 18, pt. 1,	5	0	4	1	12	0	12 0
Ditto, vol. 18, pt. 2,	8	0	8	0	0	0	0 0 0
Ditto, Index to first 18 vols.	20	0	19	1	0	0	12 0
Ditto, vol. 19, pt. 1,	31	0	28	3	0	1	16 0
Ditto, vol. 19, pt. 2,	38	0	34	4	0	2	8 0
Ditto, vol. 20, pt. 1,	29	0	27	2	0	1	4 0
Ditto, vol. 20, pt. 2,	37	0	33	4	0	2	8 0
Amis-ul-Musharahn, 4to. sewed, ..	3	0	3	0	12-10	0	0 0 0
Futwa Alemgiri, vol. 1, royal 4to. ..	1	0	1	0	24	0	0 0 0
Ditto, vol. 2,	1	0	1	0	0	0	0 0 0
Ditto, vol. 3,	3	0	3	0	0	0	0 0 0
Ditto, vol. 4,	4	0	4	0	0	0	0 0 0
Inayah, vol. 3, 4to.	1	0	1	0	0	0	0 0 0
Ditto, vol. 4, 4to.	32	0	32	0	0	0	0 0 0
Kisayah, vol. 3, 4to.	6	0	5	0	0	0	0 0 0
Ditto, vol. 4, 4to.	5	0	29	0	0	0	0 0 0
Mahabharata, vol. 1, royal 4to. ..	6	25	32	2	0	2	8 0
Ditto, vol. 2,	8	25	31	1	0	1	4 0
Ditto, vol. 3,	11	25	52	2	0	2	8 0
Index to ditto, 4 parts,	20	50	20	*16	5-8	4	10 8
Ditto, part 4.	20	0	3	0	0	0	0 0 0
Naishadha Charita,	3	0	21	0	12	0	0 0 0
Raja Tarangini, comp. 1 vol. royal 4to. sd.	21	0	1	0	20	0	0 0 0
Susruta, vol. 2, 8vo. sewed...	2	0	5	1	7-2	0	7 2
Tibetan Dictionary, 4to. sewed,	5	0	21	0	20	0	0 0 0
Mahabharata, vol. 4, royal 4to.	0	25		3	24	3	12 0
						£24	13 10
Sundry Advertising, .. .. .. ..	..	..	..	..	..	£1	18 0
Commission 5 per cent. .. .. .. ..	..	..	..	..	..	1	4 8
						3	2 8

* Distributed.

1 Index to Mahabharata, 4 p. to Library E. I. H.

1 Ditto ditto to Professor Wilson.

1 Mahabharata, vol. 4, to Professor Wilson.

E. E.

Wm. H. ALLEN, AND CO.

London, July 2, 1844.

£21 11 2

DR... The Asiatic Society, Calcutta, in Account with Wm H. Allen and Co... Cr.

For Journal of the Asiatic Society.						No. of Copies receiv- ed.	On hand June 29, 1844.	Sold.	Per Copy.
No.	133,	134,	135,	136,	137,				
133,	50	16	*22	2.9 £3 0 6
134,	50	18	20	.. 2 15 0
135,	50	17	21	.. 2 17 9
136,	50	19	19	.. 2 12 3
137,	50	18	20	.. 2 15 0
138,	50	16	22	.. 3 0 6
139,	50	20	18	.. 2 9 6
140,	50	21	17	.. 2 6 9
141,	50	24	14	.. 1 18 6
142,	50	25	13	.. 1 15 9
Advertising, Porterage, Booking, Postages, &c.									25 11 6
Commission 10 per cent.									£2 7 0 2 11 2 4 18 2

London, 2nd July, 1844.

E. E.

£20 13 4

WM. H. ALLEN AND CO.

* Distributed as under:—12 Copies each, No 133 to 142, Professor Wilson, Editor Asiatic Journal; Royal Society; Royal Asiatic Society; Edinburgh Philosophical Journal; Royal Institution; Philosophical Journal; Athenaeum; Baron Von Hammer Purgstall; Royal Society of Edinburgh; Spectator; Professor Schlegel.

DR... The Asiatic Society, Calcutta, in Account with Wm. H. Allen and Co... Cr.

June 30, 1843.	To Balance of Account stated, ..	13 18 3	Feb. 17, 1844.	By Cash per Murray,	21 0 9
	Sundries duty on Maha-bharata per City of Poonah and Shipping expenses on various packages received to forward as per statement herewith, ..	80 6 3		Amount of sale of "Journal" carried here as per letter received from H. Torrens, Esq. dated Sept. 5, 1843, .. .	32 17 0
	To Balance, ..	51 17 9	June 29,	Account sale of Oriental works as per statement herewith, ..	21 11 2
		£96 2 3		Account Sale of Journal of the Asiatic Society as per particulars enclosed, ..	20 13 4
					£96 2 3
			By Balance, ..	.. £51 17 9	

London, 2nd July, 1844.

E. E.

WM. H. ALLEN AND CO.

HENRY PIDDINGTON, Esq.

SIR,—Your letter dated the 16th April, enclosing a bill of lading for a case forwarded by the John Fleming, for the Société Royale d'Agriculture de Lyons, has been received, and on the arrival of that vessel, the needful shall be done with it.

SEPT. 1844.]

Proceedings of the Asiatic Society.

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The Journal of the Asiatic Society shall likewise be regularly forwarded to the Society at Lyons.

We are, Sir,

Your faithful servants,

London, July 2nd, 1844.

W.M. H. ALLEN AND CO.

MESSRS. W. H. ALLEN AND CO. *Leadenhall Street, London.*

DEAR SIR,—I have the pleasure to acknowledge the receipt of your letter, dated the 2nd July last, covering your account current with the Asiatic Society of Bengal closed to the 30th June last, exhibiting on that date a balance of £51 : 12 : 9 in its favor, together with averages of books. All these have been on examination found correct and satisfactory, and I am desired to say, that the Society approves of your intention to retain the amount in part payment for the bust of Mr. B. H. Hodgson, which you have been commissioned to get executed. To this sum you will please add £9 : 19 : 2, being sale proceeds of Journals up to No. 133, sold by you, on my individual account, agreeably to your averages rendered in your letter of the 30th January 1844, making together £61 : 11 : 11, but deducting therefrom £2 : 19 : 6, being the value of a set of bills drawn by me on you in favor of Mr. Bartlett, per advice of the 9th August last, which will leave a total of £58 : 12 : 5, disposable for the bust in question.

You will please convey to Dr. Busch of Bremen, the thanks of the Society for the box of shells, which on coming to hand, will be more suitably acknowledged.

I am, &c.

5th October, 1844.

HENRY TORRENS.

Read the following letter from Baboo Hurreemohun Sen, in reply to the V. P. and Secretary's letter of 9th August:—

To H. TORRENS, Esq., Vice President and Secretary, Asiatic Society.

DEAR SIR,—In acknowledging the receipt of your very kind letter of date the 9th instant, conveying to me and the other members of my late father's family, the many expressions of regret and sorrow felt by the Society at his lamented death, I have to apologize much for the delay which, owing to circumstances over which I had no control, has been incurred in my doing so.

Allow me and the rest of the family to return you and all the other Members of that noble institution, our heartfelt thanks for their kind condolence on this occasion, and to assure you, that we highly appreciate, and are grateful for, their kind sympathy in our present distress, and more especially for the sincerity with which it is expressed. The contents of your letter, Sir, have afforded us a great consolation; a consolation which, at such a time as this, is so much needed, and which, coming as it does, from so highly respectable a body of gentlemen, cannot fail to serve as a soothing balm to our painful hearts. It indeed gives a melancholy gratification to our mind to know,

that his loss is so deeply felt and regretted; and his services acknowledged in so very strong terms by those who form a Society which, in point of importance, value and respectability, is the first in the country, and with whom he laboured hand in hand to promote its object for many many years. Fully aware as we are of the painful feeling which this mournful event must have excited in the minds of his late colleagues in the Society, and feeling proud of such a participation, on their part, in the grief we have experienced on account of it, we cannot but be gratified by the conviction which your letter so forcibly conveys to our mind, that his services to the Society and his good qualities had so much endeared him to them, and been conducive to the interest of the institution to such a degree; and in conclusion, we beg to express our feelings of gratitude to them for so valuable a record of the opinion of his career, as well as of his talent and public and private virtues generally, a record which we shall always preserve in the family with pride and pleasure, and to remain,

Dear Sir,

Your most faithful and humble servant,

Bank of Bengal, 29th August, 1844.

HOREMOHUN SEN.

The Secretary stated, that he had received a private note from Dr. Campbell, stating, that as authorized by the Society, a brick monument had been built over the grave of Mr. Csoma de Koros, and requesting that a marble slab might be sent up with an inscription for insertion in the space left for it. An elevation of the monument accompanied the letter. The tablet was ordered as requested.

Read the following extract of a private letter to the Secretary, from G. T. Lushington, Esq. C. S.:—

H. TORRENS, Esq. *Secretary of the Asiatic Society, Calcutta.*

MY DEAR TORRENS,—I got up the other day one of the Society's Sanscrit Works, the "Naishada Kabya," 1 vol. price 6 Rs. for a native here, who says that it is incomplete, being only half of the original. Can you tell me whether there is another volume also printed, completing the work, and if there is, would you kindly send it me per dák bhangy, or make it over to my agents, Gunter and Greenaway, who will pay the expences.

G. T. LUSHINGTON.

After some conversation it was ordered, that the subject of the printing of the second volume of the Naishada be referred to the committee of Papers for report.

Read the following letter from the Secretary to Government, North West Provinces :—

No. 715.

From J. THORNTON, Esq. Secy. to Government N. W. P. to Secy. Asiatic Society, Calcutta, dated Agra, the 6th August, 1841.

General Department.

SIR,—I am desired to place at the disposal of the Asiatic Society, and for publication in the Journal, the accompanying Note, regarding the Navigation of the Nerbudda River, compiled from such information as could be found on the records of this Government, by Mr. A. Shakespear, the Assistant Secretary.

2nd. In the reduction of the map to a size more suitable for publication, the names which are underlined should be retained, as they are mentioned in the Memor, and are essential to a right understanding of the subject. To prevent mistakes, a separate list of them is annexed, arranged as they occur in proceeding down the stream from East to West. As many more names as is conveniently practicable should of course be inserted, but these ought not to be omitted.

I have the honor to be, Sir,

Your most obedient servant,

J. THORNTON,

Agra, the 6th August, 1841.

Secy. to Govt., N. W. P.

The map, which is a splendid one on a scale of 16 miles to an inch, and forms a roll 8 feet in length, was exhibited.

With reference to the names, it was stated by the Sub-Secretary, that arrangements had been made (by numbering,) so that *all* the names would virtually be inserted in the reduced map for the Journal.

Read the following correspondence on the subject of the Madras Meteorological Registers applied for by the Society :—

No. 403. .

From T. R. DAVIDSON, Esq. Offy. Secy. to the Govt. of India, to H. TORRENS, Esq. Secy. to the Asiatic Society, Calcutta, dated the 27th July, 1844.

Home Department.

SIR,—With reference to your letter without date, received in July 1843, I am directed to transmit for the information of the Asiatic Society, &c. No. 178, dated 2^d July 1843; from Secy. to Govt. Fort St. George, No. 199, dated 6th July 1844, with enclosure to ditto, dated 27th ditto.

copy of the correspondence specified in the margin.

I am, Sir,

Your obedient servant,

T. R. DAVIDSON,

Council Chamber, the 27th July, 1844.

Offy. Secy. to the Govt. of India.

No. 51.

To J. F. THOMAS, Esq. Secy. to Govt. Fort St. George.

Home Department, Marine.

SIR,—I am directed to transmit the accompanying copy of a letter from the Secretary to the Asiatic Society, and to request, that you will, with the permission of the Most Noble the Governor in Council of Fort St. George, issue the necessary orders to cause that Society to be furnished direct with the information therein required.

I have, &c.

(Signed)

T. R. DAVIDSON,

Fort William, the 22d July, 1843.

Offg. Secy. to the Govt. of India.

The same to the Governments of Bengal and Bombay.

No. 199.

From J. F. THOMAS, Esq. Secy. to Govt. of Fort St. George, to the Secy. to Govt. of India, dated 6th July, 1844.

Home Department.

SIR,—With reference to Mr. Secretary Davidson's letter of the 22d July, 1843, I am directed to forward copy of one from Lieutenant Elliot at Singapore, under date 25th April last. As it would appear, that Lieutenant Elliot's establishment is not equal to any extra labour, and that the whole of the observations required by the Asiatic Society will, "soon be published in England," the Most Noble the Governor in Council, submits for the consideration of the Government of India, that the Asiatic Society should for the present receive, as proposed by Lieutenant Elliot, only a copy of the mean results, and that instructions to this effect be issued.

I have, &c.

(Signed)

J. F. THOMAS,

Fort St. George, 6th July, 1844.

Secy. to Govt. Military Department.

No. 292.

To the Military Secretary to Government, Fort St. George.

SIR,—In compliance with the Extract of the Minutes of Consultation of the 29th of August 1843, I have written to the Surveyor General of India, to forward all the copies of Magnetic and Meteorological Observations in his possession to the Secretary of the Asiatic Society, Calcutta. I hope that mean results will be considered sufficient for the present, since all the observations which are now sent to the Royal Society, will very soon be published. If I were to send complete copies of the Observations that I have the honor through you to send to the Hon'ble East India Company, the work would be just doubled, and it is as much as I can do with the aid of four assistants at the Observatory to complete the report without falling into arrears.

This will be understood if I just give an outline of the work at the Observatory: 12 instruments are observed every hour in the twenty-four, and registered in a rough observation book, from which they are entered in the day book, then abstracted in a book for the purpose, and finally fresh sheets are copied out, which are forwarded through you to the Hon'ble East India Company. Besides this, extra observations, the corrections of all the instruments, absolute determinations, the diurnal and hourly march of the instruments registered in curves; the anemometer papers and copies of our observations to all the Indian observatories, and I think it will be allowed that it

will be sufficient for the Asiatic Society for the present to receive the hourly and daily means of the instruments for the month.

Again, with reference to the tides, I send one complete copy of the curves described by the instruments, and the registry to the Hon'ble East India Company's Astronomer, Madras, for transmission through him to the Home Government, another complete copy I forward through the Honorable the Governor of the Straits to the Secretary to the Government of India, (Home Department.) Now if I might be permitted to make a suggestion, it would be to forward the remainder of the tides not yet dispatched, to the Secretary of the Asiatic Society, Calcutta, and those that have been already sent to Bengal to be handed over to him.

I hope I shall be excused in making these remarks, for it has appeared to me, that the Secretary to the Asiatic Society in calling for complete copies had neither an idea of the enormous additional labour that it would entail on the Observatories, (requiring for the purpose an extra assistant constantly copying,) nor that the whole of the observations would ultimately be published in England.

I intend to write to the same effect to the Secretary to the Asiatic Society, but I shall defer forwarding any abstracts until I have on this subject the opinion of the Most Noble the Governor in Council.

I have, &c.

Singapore, 25th April, 1844. (Signed) C. M. ELLIOT, *Lieut. Engineers,*
Superintendent Magnetic Observatory.

(A true Copy.)

(Signed) J. F. THOMAS,
Secretary to Government.

No. 380.

To J. F. THOMAS, Esq. Secretary to Government, Fort St. George.

Home Department, Marine.

Sir,—I am directed to acknowledge the receipt of your letter No 199, dated the 6th instant with its enclosure, and to state, that for the reasons assigned by the Superintendent of the Magnetic Observatory at Singapore, the Governor General in Council concurs in opinion with the Most Noble the Governor in Council of Fort St. George, that the Asiatic Society at Calcutta should receive, as proposed by Lieut. Elliot, only a copy of the mean results of the Magnetic and Meteorological Observations, instead of copies of the entire observations. The necessary communication on the subject will be made to the Secretary to the Asiatic Society at Calcutta.

I have, &c.

Fort William, the 27th July, 1844. (Signed) T. R. DAVIDSON,
Offy. Secy. to the Govt. of India.

(True Copies.)

T. R. DAVIDSON,
Offy. Secy. to the Govt. of India.

Ordered, that it be explained that the Society, fully sensible of the steady desire of Government to forward its views in all matters of utility, was

only desirous of such mean results, or details as could be afforded without inconvenience.

Read the following letter :—

No. 2,037, of 1844.

From F. CURRIE, Esq. Secretary to the Govt. of India, to the Secy. to the Asiatic Society, dated Fort William, 24th August, 1844.

Foreign Department.

SIR,—By direction of the Governor General in Council, I have the honor to transmit to you for such notice as the Society may deem it to merit, the accompanying copy of a report by Mr. B. Woode, of his proceedings during his late Tour on the Naga frontier.

I have the honor to be, Sir,

Fort William, the 24th Aug. 1844.

Your most obedient servant,

F. CURRIE,
Secy. to the Govt. of India.

The paper was referred to the Editors of the Journal.

Read the following letter addressed under orders of the Meeting of July, (see proceedings,) to the Secretary to the Government of Bengal with its reply :—

The Secretary to the Government of Bengal, Home Department.

SIR,—By desire of the Honorable the President and Committee of Papers of the Asiatic Society, and in pursuance of a resolution passed at the Meeting of the 3d instant, I have the honor to request, that you will be pleased to submit to the Honorable the Government of Bengal, the accompanying specimen pages and certificates relative to a proposed Sanscrit Dictionary in Bengali characters, to be entitled the *Sabda Ratnakar*, the author of which is Baboo Gooropresad Roy, a Pundit of much eminence, and for which he, as well as the Asiatic Society, respectfully solicit the support and patronage of Government, to enable him to carry it through the press. A copy of the Baboo's letter to the Society will be found with the certificates, and the resolution of the Asiatic Society in reference to it is noted in the margin.

The Society would desire respectfully to represent to H. H. that the work is one of immense labour, and will be of the highest utility to Bengalee students of Sanscrit, comprising as it does in itself, the essentials of several other works now only existing in MSS., and expensive and difficult to obtain, and that thus it will be in an educational point of view of most essential service to the native community, and that the Society indeed would have been happy to have given it a larger share of support, could it with reference to existing engagements and claims have done so, and were the work one of a higher, and more classic standard.

It begs further, with deference, to suggest, that the Government might probably with much public advantage confer copies of it, when published, as prizes in the Public Colleges, for which purpose it is a work most excellently adapted.

I am desired to add, in conclusion, that the Society is not aware of any modern work in Sanscrit literature which has appeared for many years, better deserving the sup-

port of the Government of India, with reference to purposes of practical utility in the study, (with the native community,) of a language so important to them.

I am, Sir,

Asiatic Society's Rooms, 12th July, 1844.

H. TORRENS,

V. P. and Secy. Asiatic Society.

No. 582.

From the Under-Secretary to the Govt. of Bengal, to H. TORRENS, Esq. Secretary to the Asiatic Society, dated Fort William, 27th August, 1844.

Education.

SIR,—I am directed to acknowledge the receipt of your letter, dated the 12th ultimo, and to state, that the Deputy Governor regrets that the Government cannot subscribe for any copies of the proposed Sanscrit Dictionary, specimen pages of which accompanied your communication.

I have the honor to be, Sir,

Your most obedient servant,

CECIL BEADON,

Under-Secretary to the Government of Bengal.

Read the following letter from Mr. W. C. Colton, Assistant Librarian, presenting a mummied hand and curious knot of a tree, (forming, naturally, the figure of an animal,) to which it refers :—

To H. PIDDINGTON, Esq. Sub-Secretary, Asiatic Society.

SIR,—I beg leave to present to the Asiatic Society's Museum, the accompanying hand, taken from an Egyptian Mummy in one of the pyramids near Cairo, and supposed to be about three thousand years old.

Also, a curious specimen of a knot taken from a tree, in the Island of the Mauritius, in the year 1840.

I have the honor to be, Sir,

Your obedient servant,

Calcutta, 11th September, 1844.

W. C. COLTON.

Read the following letter from the Rev. J. J. Moore, Secretary Agra School Book Society to the Sub-Secretary :—

No. 239.

MY DEAR SIR,—I am happy to say that the two boxes of books have reached me in safety, with the exception of 9 which are injured by water and have to be rebound, however this matters little. The books for the Maharaj of Jodhpore, I have forwarded to the Political Agent, Capt. French. The cost of them I shall remit to you as soon as realized.

The bill against the Society I hope to remit a draft for, at the close of the month. I am much obliged to you for the kind trouble you have taken.

Believe me, your sincerely,

15th August, 1844.

J. MOORE.

Read the following letter from Dr. Mount :—

To H. TORRENS, Esq.

MY DEAR TORRENS,—Would the accompanying articles be of any use to your Museum? Intrinsically they are of no value, but as they were both brought from the field of Punniar, they may be esteemed worthy of preservation. The matchlock was

taken from a Mahratta by a soldier of the Queen's 50th at Punniar, who I believe bayoneted him. The ball was one fired from the Battery stormed by the 50th, and fell within a foot of my brother, who had it picked up and preserved as a relic of the fight.

I am collecting, or rather attempting to do so, a small Mineralogical and Geological Museum for the Medical College, and have sent home for a complete set of European specimens, classified and arranged, which I hope will arrive here shortly.

Do you think the Asiatic Society would object to make over to us any triplicate or quadruplicate specimens which may not be worth preserving by them, and are not of sufficient value to send home; for we must be moderate in our expectations, and be content with small beginnings. I hope ultimately to see complete courses of Geology and Mineralogy given in this College, that our Students may obtain some acquaintance with these highly interesting and in this country important branches of science.

Very truly yours

Medical College, 30th August, 1844.

FRED. J. MOUAT.

Resolved, that the Curator in the Geological and Mineralogical Departments be desired when the arrangements of the collections will admit of it, to assist Dr. Mouat's views.

The Sub-Secretary, as Curator, stated, that (see Journal Vol. X, p. 172, Proceedings for May 1841,) he had already pointed out to the Society, this as a very proper method of disposing of spare specimens.

Read the following letter from Dr. A. Sprenger, B. M. S.:-

To the Secretary of the Asiatic Society of Bengal, &c. &c. &c.

MY DEAR SIR,—I beg leave to send you an article for the Journal of the Asiatic Society. If you have plenty of space in your present number, I shall make it longer, adding passages which show from whence the Arabs obtained the principal articles of commerce, as for instance paper, which was manufactured at Samarcand, &c. Print this part, and let me know about the rest.

I am, your very faithfully,

Chinsurah, August 28, 1844.

A. SPRENGER.

The Secretary stated, that as the MSS. was much interlined, he had placed it in the hands of a good copyist, and would first return it to Dr. S. for his revisal before placing in the hands of the printers.

The Curator Geological and Mineralogical Departments stated, that having been for the most part occupied in preparatory arrangements in the Laboratory, and having nothing of note to minute, he had deferred making any report for the present month.

Proceedings of the Asiatic Society for the month of OCTOBER, 1844.

The usual monthly meeting of the Society was held on Wednesday evening the 2nd October, 1844, at 8 p. m.

The Honourable Sir H. Seton in the chair.

The following members proposed at the last meeting were ballotted for, and declared duly elected:—

A. C. Barwell, Esq. B. C. S.

John Owen, Esq.

Corresponding member, J. McGowan, Esq. Ningpo Hospital.

And the following new members were proposed:—

T. R. Davidson, Esq. B. C. S., proposed by H. Torrens, Esq. and seconded by H. Piddington, Esq.

Allan Gilmore, Esq., ditto ditto ditto.

J. P. McKilligen, Esq. ditto ditto ditto.

Captain T. Marshall, proposed by S. G. T. Heatly, Esq. and seconded by H. Torrens, Esq.

Read the following list of books presented, exchanged and purchased:—

Books presented.

1. Meteorological Register for August, 1844.—From the Surveyor General's Office.
2. Journal of the Royal Geographical Society of London, Vol. 13th, part I, 1843, London, 8vo.—By the Society.
3. Extrait du Rapport Annuel fait à la Société de Géographie de Paris, 1839.—By the Society.
4. Accroissement de la Collection Géographique de la Bibliothèque Royale, en 1841.—By the Geographical Society.
5. Journal of the Bombay Branch Royal Society, No. 7, May 1844.—By the Society.
6. Journal of the Agricultural and Horticultural Society of India, vol. iii, part i. By the Society.
7. Oriental Christian Spectator, vol. 5, No. 9, September 1844.—By the Editor.
12. Madras Journal of Literature and Science, No. 30, June 1844.—By the Society.
8. Inquiry into the Means of Establishing a Ship Navigation between the Mediterranean and Red Seas, by J. Vetch. Second edition, London, 1843.—By the Author.
9. Notation Hypsométrique ou Nouvelle Manière de Noter les Altitudes, par M. Jemard, 1840.—By the Author.

Books exchanged.

10. *Annals and Magazine of Natural History*, Vol. 14, Nos. 88 and 89, July and August, 1844.
 11. *The Athenaeum*, Nos. 871 to 874, July 1844.

Read the following Proceedings of the Committee of Papers:—

At a Meeting of the Committee of Papers held on 13th September at half-past 10 A. M.

Present.—The Honourable Sir J. P. Grant, the Honourable Sir H. Seton, Lieut. Col. Forbes, C. Huffnagle, Esq., S. G. T. Healy, Esq., and Rev. Dr. J. Hæberlin.

Resolved,—That the Members of the Society be informed by Circular, that at the next Meeting a President to the Society will be elected.

2nd. That a deputation having been offered to wait upon the Hon'ble W. W. Bird, and his occupations having interfered with his receiving it at the hour proposed, the Secretary be instructed to draw up a suitable address to our late President, requesting him to make choice of an artist of reputation in England, by whom his Portrait may be taken of the Kit Cat size, to be placed in the Meeting Room of the Society, with those of his predecessors in office.

J. P. GRANT, *Chairman.*

And letters as follows:—

To the Honorable W. W. BIRD, Esq. late President of the Asiatic Society of Bengal.

HONORABLE SIR,—I have been instructed to apprise you, that the letter of resignation of your office of President, which I had the honour to submit at the last meeting of the Society, was received with the expression of the regret of its members, at the cessation of your connexion with a body to which you have belonged for more than three and thirty years.

The Society has, I am instructed to state, a lively sense of the value of the support and assistance you have afforded it during the time that you have held the office of its President. You, Sir, have by constant supervision of our Proceedings encouraged and stimulated the work in which the Society has been engaged, and by a judicious use of the opportunities available in your high official situation you have put the Society in a position to diffuse the results of scientific enquiry conducted by the Government, among its members, and the scientific world at large.

Anxious to possess a memento of you, the Society instruct me to request, that you will do them the favour of selecting an artist of good reputation in England, by whom your Portrait may be painted in the Kit Cat size, for the purpose of its being placed in the Meeting Room of the Society, together with those of your predecessors in the Chair of President.

The Society instruct me to beg, that you will take the further trouble of referring the artist you may select to our Agents, Messrs. W. H. Allen and Co. Leadenhall Street.

The Society, in conclusion, direct me to express their thanks and acknowledgments for the kind urbanity with which you have at all times met them, for the lively interest

which you have evinced in their pursuits, and for the steady maintenance which you have invariably afforded to their interests as a constituted body.

I am, Honorable Sir,

Your most obedient servant,

H. TORRENS.

To H. TORRENS, Esq. Vice President and Secretary to the Asiatic Society of Bengal.

Sir,—I beg to acknowledge the receipt of your letter of the 13th instant, communicating to me the thanks of the Society, for the support and assistance which I afforded them during the time I had the honor to hold the office of President, and requesting, that I would allow my Portrait to be painted for the purpose of being placed in the Meeting Room of the Society, together with those of my predecessors in the chair.

I beg you will express to the Society how sensible I am of the honor they have done me, and how gratified I feel, that the little I have been able to do for the maintenance of their interests, should be considered deserving of so flattering an acknowledgment. With every wish for the continued success of their labours.

I have the honor to be, Sir,

Your most obedient servant,

Calcutta, 17th September, 1844.

* W. W. BIRD.

The Society then proceeded to the election of a President, when the Honourable Sir Henry Hardinge being proposed from the chair, and seconded by Lieut. Col. Forbes, was unanimously elected. It was arranged, on the suggestion of Col. Forbes, that the Secretary should be requested to ascertain from the Private Secretary, when it might be convenient for the Honourable the Governor General to receive a deputation from the Society of such members as might please to form it; and that Sir Henry Seton, as the Vice-President in the chair this evening, be requested to conduct the deputation.

Read the following report and letters submitted to the Society by the Sub-Committee for publishing Sir A. Burnes' drawings:—

The Committee for publishing Sir A. Burnes' Drawings, with reference to their first report to the Society in July 1843, have now the honour to present a farther report as follows:—

The Committee having, as authorized, added to their numbers the undermentioned members:—

Rev. J. Hæberlin,

S. G. T. Heatly, Esq.

And being now composed of the following members; viz.

H. Torrens, Esq., Charles Huffnagle, Esq., Rev. J. Hæberlin, S. G. T. Heatly, Esq., and Henry Piddington Esq., Secretary to the Committee.

Meeting on Wednesday, the 18th September, 1844.

And all the Members and Secretary being present, proceeded as follows :—

1. Read for the information of the new Members, the report of July 1843, and the following Memorandum of the state of the trust up to the present date.

Memoranda for Committee on Sir A. BURNES' Drawings.

1. The Committee was named in March 1841.—Journal, Vol. IX. p. 1130.

2. It decided specially, with reference to *selections* from the drawings, that, as the true object of the trust confided to the Society by Government was undoubtedly to diffuse as much as possible the knowledge which Government had acquired at a heavy expence, and also as matter of justice to the labours of the Envoy and Naturalist, as well as of convenience to future naturalists and travellers in the valley of the Indus and Affghanistan, that the *whole* of the drawings should be published; except perhaps some few very common ones, if any such were found.

3. This was duly reported and confirmed at a general meeting, but it has not been placed upon record. It is supposed to have been confirmed at the meeting of April 1841, See Journal, Vol. XI, p. 72.

4. The preparation of the plates was continued, and with extreme care, till Mr. Ballin's death, when difficulties gradually arose which have not yet been adjusted, but shortly will be so, without, it is hoped, any loss to the Society's interests.

5. Mr. Blyth arrived in September 1841, taking charge of the Museum on the 6th September, (Vol. XI, p. 755,) and this undertaking amongst other matters was then specially brought to his notice, and the drawings and finished lithographs shewn him, their cost explained, &c. He was also shewn that the Acting Curator, Mr. Piddington, had indexed the whole of Dr. Lord's notes in readiness for him to commence on the letter-press.

6. The notes of Dr. Lord were subsequently duly made over to him by the Secretary; and then, and on more than one subsequent occasion, when Mr. Blyth objected to the drawings as inaccurate, and as deviating from already known types, and proposed *correcting* them, it was distinctly explained to him that, in such case, the Society would be guilty of a breach of trust, and even of a scientific fraud; since it would publish as the *drawings* made on Sir A. Burnes' Missions, *pictures* of something which were not so: and that, as well known to him, the now anxious search of all European naturalists is exactly to find the original drawings from which local fauna (ornithes) had been published, in order to correct these flourishes, and interferences of artists and naturalists; who, to make better *pictures*, and reduce the birds (principally) to their fancied types and systems, had in many instances created enormous confusion, deprived the original observers of their due credit for active research and accuracy, and had even made them pass, at least as careless persons, if not as impostors; when, on the contrary, the mischief and imposture was the work of the naturalist editors, publishers and artists.

6. The Reports of the Committee in July 1843, Proceedings, Vol. XI, p. 618, will shew in all its relations that the Committee has not been to blame, and how far the Society's wishes and orders have, or have not, been acted upon.

7. The Secretary to the Committee deems it his duty to state to the Committee, that with the concurrence of the Society, the whole of these drawings, except such as were required for the artists, were placed under lock and key, and under the special charge of the Librarian, with strict injunctions that they were only to be shewn or delivered by special order, as in the case of the Mackenzie collection and other rare and valuable drawings ; the finished ones being of course at Mr. Blyth's disposition. He now learns that they have been all placed in Mr. Blyth's hands.

Dr. Roer being called in, says he knows nothing of Dr. Lord's notes, which have never been in his possession.

Resolved,—That a letter be written to Mr. Blyth, requesting within a given time, (Saturday next,) a report as to the progress made in the text for Sir A. Burnes' drawings, and as to whether Dr. Lord's notes have been recovered.

The following letter was therefore addressed to Mr. Blyth :—

To E. BLYTH, Esq. Curator Asiatic Society.

SIR,—A meeting of the Committee for the publication of Sir A. Burnes' drawings of the Zoology of the Indus, desires to enquire, what progress you have made in the letter-press to accompany those drawings.

I am further to enquire, with reference to a statement made by you that the notes on those drawings by Dr. Lord are lost, whether you have recovered those notes, the Committee having ascertained that the notes were never in Dr. Roer's possession, and it having been proved that they were delivered to you by me, and have not, in so far as any evidence before the Committee goes to shew, been ever out of your hands.

On these points the Committee request a specific answer in writing before Saturday next the 21st instant, to enable the Committee to take early cognizance of the question.

I have, &c.

H. TORRENS.

Committee adjourn to Wednesday, 25th September, 1841.

At an adjourned Meeting of the Committee for the publication of Sir A. BURNES' Drawings, held on the 25th September 1844, at the Society's Rooms, at half-after 10 o'clock A.M.

Present.—Rev. J. Haeserlin, Chas. Huffnagle, Esq., S. G. T. Heatley Esq., H. Torrens, Esq., V. President and Secretary, H. Piddington, Secretary to the Committee.

Read letter from Mr. Blyth.

H. TORRENS, Esq. Secretary to the Asiatic Society.

SIR,—With reference to the first question proposed to me in your note of the 18th ultimo, I beg to inform you, that from the commencement of the present month, I have devoted as much time as my other and stringent duties would permit of to the preparation of the letter-press to accompany the publication of Sir A. Burnes' draw-

ings; and that sufficient progress has been made to warrant my undertaking to complete it in the course of a few weeks.

The MS. notes, however, I regret to add, have not been found up to the present time, but they can scarcely have been abstracted from the Museum. Their value was, indeed not great, as they consisted almost entirely of descriptions and slight dissections of well-known species, the localities of which were alone new, and these are further noted on the drawings: but I am surprised beyond measure at the non-appearance of the papers, and do not offer the foregoing opinion regarding their value as any extenuation of the annoying circumstance of our not being at present able to find them.

I have, on several occasions, looked over the papers, with the intention of preparing for the press what little could be extracted from them; and to the best of my recollection have always returned them to the charge of our late Sub-librarian Mr. F. Boucher, since the period of whose leaving I have never consulted the MS. in question, and had no idea but that it would be immediately forthcoming when I lately applied for it.

I have the honor to be, Sir,

Your obedient servant,

Asiatic Society's Museum, September 21, 1844.

E. BLYTH.

Resolved,—The letter from the Zoological Curator having been read, the Sub-Committee deem it necessary to place on record for report to the Society the expression of their extreme regret and surprise at the annoying circumstance, as noted by Mr. Blyth, of the non-appearance of these notes. The Sub-Committee further desire to observe, that Mr. Blyth's assurance that the preparation of the letter-press will be completed in a few weeks is the most satisfactory declaration which it has yet fallen to their lot to report with reference to the important duty confided to them.

The Sub-Committee propose in consequence of the above assurance, to proceed with the printing of the letter-press as it is prepared, in order that the plates already finished may be published at the earliest possible date.

The report of the Committee was considered as satisfactory, and adopted by the meeting.

Read the following letter from Government, and extract of dispatch accompanying it:—

Duplicate.

No. 2288.

From the Under Secretary to the Government of Bengal, to the Vice President and Secretary to the Asiatic Society, dated Fort William, 12th September, 1844.

Sir,—I am directed to transmit the accompanying copy of a letter from the Hon'ble the Court of Directors, No. 15, dated the 29th May last, with enclosure; also a transcript of a Circular addressed to the Civil Officers in this Presidency, and to

request that the Asiatic Society of Calcutta, will supply the Government with such information regarding the antiquities, the state of the liberal and mechanic arts, and the native customs of this Presidency, as the Museum and collections of the institution may afford; besides suggesting such means as may occur to the Society, for enabling Government the better to comply with the wishes of the Hon'ble Court.

I have the honor to be, Sir,

Your most obedient servant,

(Signed) A. TURNBULL,

Under Secretary to the Government of Bengal.

PUBLIC DEPARTMENT.

No. 18 OF 1844.

Our Governor General of India in Council.

PARA. 1.—We forward to you the copy of a letter dated 8th April 1844, addressed to us by the Royal Asiatic Society of Great Britain and Ireland, bringing to our notice the state of those interesting monuments of Antiquity, the Cave Temples of India, and soliciting our interposition to preserve them from all such causes of injury and decay as may be obviated by means within the authority of our Indian Government. With reference also to the peculiarly perishable nature of the paintings in the Caves of Ajunta, the Society is anxious that carefully executed copies of them should be made before it is too late, and as those drawings are the only authentic records that exist of many of the usages of the people of India at the probable date of their execution, it would no doubt be little creditable to an enlightened Government to suffer them to perish without an effort to perpetuate their subjects by faithful and artistic delineation. We therefore recommend it to your special consideration to determine upon and adopt such measures, either by the occasional employment of some of our talented officers, when the calls of the public service permit of it, or by such other means as may appear to you to be best calculated to ensure the procuring of good copies of the paintings in the Caves of Ajunta, and of drawings of the other Caves: using such means also for the protection of the Caves themselves against dilapidation, as may be consistent with any use to which they may have been legitimately applied.

2. We take this opportunity also of apprising you, that we are desirous of collecting a series, as ample as possible, of delineations (accompanied by short explanations) of various objects of interest and instruction, illustrative of the state of the liberal and mechanic arts in India, and of the phases, character and condition of its various tribes and people, comprising architecture, implements, costumes, &c. for our library, frequent reference being made to it, (at present with little advantage,) for such sources of information. We should think it possible, that moderate encouragement on your part would readily obtain an abundant supply of such materials from different individuals in the service of the Company.

3. Absolute accuracy being essentially necessary in the drawings, and the use of Dollond's Camera Lucida ensuring that indispensable object, we shall transmit without delay to the Government of each of the presidencies three of these instruments.

We are, &c.

(Signed)	John Shepherd,	(Signed)	Henry Alexander,
"	Henry Willock,	"	Robert Campbell,
"	W. H. C. Plowden,	"	H. Shank,
"	J. W. Hogg,	"	John Masterman,
"	John Loch,	"	C. Mills,
"	Russell Ellice,	"	W. H. Sykes.
"	John C. Whiteman,		

London, 29th May, 1844.

The Royal Asiatic Society of Great Britain and Ireland, to J. C. MELVILLE, Esq.

14, Grafton Street, Bond Street, London, 8th April, 1844.

SIR,—The Royal Asiatic Society have had before them at their late meetings, a highly valuable and interesting paper on the Cave Temples of India, by James Fergusson, Esq., a gentleman of great research and knowledge in Architecture, who with a professional zeal worthy of all commendation, personally visited the most remarkable specimens of those singular structures, as well in Behar and Cuttack, where they are found in the earliest and most simple forms, as in the Western side of the Peninsula, where the most highly wrought and ornamental examples are extant. It is the principal object of Mr. Fergusson's paper to classify those remarkable structures according to the purposes for which they appear to have been designed, the parties by whom they were executed, and the dates assigned to them.

Mr. Fergusson is fully aware of the great value of the improved knowledge attained to in the reading of the ancient characters in which inscriptions are written on the rocks and temples of India; but he justly considers the ascertainment of a date, by an inscription not to be conclusive as to the age of the excavation, as where the character in which the inscription is written is more modern than the architectural features of the structure. In such cases, it is probable that the inscription denotes a new appropriation or use, rather than the original design or execution. He therefore applies to the examination of their age the test of architectural character, according to certain principles which he states in his able paper.

Mr. Fergusson is of opinion, that the earliest of the Cave Temples are the Buddhist, which he divides into two great classes, the Viharas or Monastic, and the Chaitya or Temple Caves. Among the most ancient Buddhist Caves, after those in the neighbourhood of Gya and in Cuttack, he ranks a very remarkable series, which lying out of the road ordinarily travelled, and being difficult of access, have been seldom visited, and are little known, those of Ajunta in Berar.

The first notice of these Caves is to be found in a paper by Lieutenant Alexander, printed in the 2d volume of the Transactions of the Royal Asiatic Society. The writer there remarks, (p. 366) : "In most of the Caves, to compensate for the want of profuse entaille and sculptures are paintings in fresco, much more interesting, as

exhibiting the dresses, habits of life, pursuits, general appearance, and even features of the natives of India, perhaps two thousand or two thousand five hundred years ago, well preserved and highly colored, and exhibiting in glowing tints, of which light red is the most common, the crisp haired aborigines of the sect of Buddhists.' He adds further on, "the high antiquity (of Buddhism,) may be satisfactorily prove both from the paintings and sculptured figures in these excavations, which exhibit traces of the existence of a woolly-haired race, now no where found on the Indian continent." Again, (p. 368) : " In the gallery or passage behind the pillars are fresco paintings of Buddha, and his attending supporters with *chowries* in their hands. The thickness of the stucco is about a quarter of an inch. The colors are very vivid consisting of brown, light red, blue and white ; the red predominates. The coloring is softened down, the execution is bold, and the pencil handled freely, and some knowledge of perspective is shewn. The figures are two feet and a half, or three feet in height.

(P. 369.) " The paintings in many of the Caves represent highly interesting and spirited delineations of hunting scenes, battles, &c. The elephants and horses are particularly well drawn. On the latter two men are often seen mounted. Ram and cock fights I observed in one of the excavations. The spears are peculiar, having three knobs near the head, and there was an instrument resembling a lyre with three strings. I observed something like a zodiac ; but not at all resembling the celebrated one at Dendera."

The following passages in Mr. Fergusson's paper relate to these highly interesting relics of Hindu antiquity :—

"After crossing the valley of the Taptee from the North, you approach a Ghaut of some 500 or 600 feet in height, supporting the table land of the Dekhan. The upper line of the Ghaut is flat and regular, and the wall, if I may use the expression, tolerably even, except in some places, where it is broken by ravines which extend for a considerable way into the table land above. It is in one of these ravines that the Caves of Ajend are situated. The entrance to the ravine is nearly half a mile in width, but is gradually narrower, as you wind up it, till it terminates in a cascade of seven falls, called the Sat-Koond, the last of which may be 100 feet high, the others, together 100 more."

"Immediately below the fall the ravine makes a sudden turn to the right, and it is in the perpendicular cliff, forming the outer side of the bend, and facing the Koond, that the caves are situated, the whole series extending, as near as I can guess about 500 yards from North to South-East. * * * * *

"No. 16. The whole of this Cave, the largest, has been covered with stucco and painted, and many of the smaller paintings on the pillars and in the panels of the roof of the aisles, remain, consisting of figures of Buddha and his disciples in various attitudes, rosettes and other ornaments ; but owing to the ruined state of the front, the rain apparently has beat in, and destroyed the larger subjects. There are several inscriptions painted on the plaster, and though none remain sufficiently entire to be transcribed, yet sufficient remains to shew, that the characters are those pre-

valent subsequent to the Christian era. On the exterior face of the Cave, however, but very high up, is an inscription of some length in the pure *Nath* character, which would at once give an antiquity to the excavation of about 100 or 200 b. c. as far as such evidence can be relied on.

" No. 17, generally called the Zodiac Cave, very much resembles the last described in almost every respect. Its dimensions are 64 feet by 63, and it has 20 pillars disposed as in the other. It is not, however, so lofty; and the details of the pillars are by no means so graceful or elegant as in No. 16. The paintings, however, are much more entire, and though the colours in some places are a good deal faded, the subjects can generally be made out.

" On the right hand wall as you enter, a procession is painted: three elephants issuing from a portal, one black, one red or rather brown; and the third a white one, which seems the principal one of the group, shewing how early arose the predilection for these animals, which still exist among the Burmese and Siamese of the present day. Chattahs and flags are borne before them; and a large retinue of men armed with spears, swords and shields follow them.

" On the back wall is a hunting scene, in which a lion powerfully and well drawn, forms the principal object of attraction. There are also deer and dogs, and men on horseback and on foot without number.

" In the verandah to this Cave are some singularly interesting paintings; at one end a circular one which I at first took for a Zodiac, though on further examination I gave up the idea. Its centre is divided in eight compartments, and the outer circle into sixteen or seventeen. Each of these compartments is crowded with small figures; but what the subject is, I could not make out.

" Over the door are eight Buddhist figures sitting cross-legged, the first four are black, the fifth fairer; the next is still more so; the last fair and wearing a crown. It is remarkable that there are more black people painted in this Cave than in any of the others. The women, however, are generally fair; and the men all shades, from black to a European complexion. The roof is painted in various patterns, not at all unlike those still existing in the baths of Titus, though in an inferior style of art. I had not time, even if I had had the ability to copy these interesting paintings, and I fear any one who now visits them, will find, that much that I saw has since disappeared.

" The style of these paintings cannot of course bear comparison with European painting of the present day, but they are certainly superior to the style of Europe during the age in which they are executed. The perspective, grouping and details are better, and the story better told than any paintings I know of, anterior to Orgagna and Fiesole. The style, however, is not European, but more resembles Chinese art, particularly in the flatness and want of shadow. I never, however, even in China, saw any thing approaching its perfection.

" I looked very attentively at these paintings to try and discover if they were fresco paintings, or merely water colors laid on a dry surface, but was unable to decide the point; the color certainly is in cases absorbed into the plaster; and I am

inclined to think they may have been painted when it was first laid on, and consequently moist; but I do not think it could have been done on the modern plan of painting each day all the plaster laid on that day."

From the remarks above quoted, as well as from the personal knowledge of several Members of the Royal Asiatic Society, no doubt remain that the Caves of Ajunta contain unique specimens of Hindoo painting of an age anterior to the Christian era, and it is equally certain that time, and the use made of these places by faquires and others, Mahomedan and Hindoo, are gradually destroying their beauty, and will soon obliterate every trace of those remains which are valuable, not only as specimens of early art, but as exhibiting the figures and habits of races long passed away, and important therefore, as illustrative of the early history of India.

The Royal Asiatic Society are anxious that before any further destruction of these singular paintings shall be effected, means may be taken to have faithful copies of them made, which they would gladly publish in their Journal, and the Council have directed me to lay the subject before the Honourable Court, with the expression of their earnest desire and hope, that instructions may be sent to the proper authorities in India, to employ some Officer in their service, as early as the opportunity shall present itself, to take such copies of them as may preserve the remembrance of these most curious and valuable remains of ancient art. I have the honour to be, &c.

(Signed) R. CLARKE, *Honorary Secretary.*
 (True Copies,) (Signed) T. R. DAVIDSON,
Offg. Secretary to the Government of India.

Circular from the Under-Secretary to the Government of Bengal, to Civil Authorities.

Dated Fort William, September, 1844.

Sir,—I am directed by the Deputy Governor of Bengal to forward the annexed copy of Correspondence noted in the margin,* and with reference to the wishes of the Honourable Court of Directors therein expressed, to request that you will report whether any Cave Temples, or other antiquities exist in the —— under your charge; and if so, that you will suggest means for preserving them from injury or decay.

2. You will of course understand, that the latter instruction only applies to such temples or buildings as are no longer used as places of worship, and have no responsible guardian appointed for their preservation. You will be careful likewise to explain the object of any researches or enquiries you may institute, in consequence of these orders, so as to prevent any misconception regarding them, on the part of the native community. I have the honour to be, &c.

(Signed) A. TURNBULL,
Under-Secretary to the Government of Bengal.
 (True Copies,) A. TURNBULL,
Under-Secretary to the Government of Bengal.

* Dispatch No. 15, of 29th May 1844, from the Honourable the Court of Directors with Enclosures.

It was stated by the Secretary, that he had thought it right to circulate these to the Committee of Papers, who were unanimously of opinion, that it was incumbent on the Society to do all in its power to forward the views of the Honourable the Court of Directors.

Mr. Piddington with a few remarks on the necessity of employing a professional artist who alone he thought, (without any disparagement to the talents of Officers in the services,) could do justice both to the letter and the spirit of these wonderful delineations, in which so much depended not on mere copying, but upon the style of drawing and the tact of seizing what was characteristic and illustrative, especially in what related to the human figure, and to manners and customs, proposed,

"That the Society do address Government, pointing out strongly the great importance of employing a professional draftsman for the copying of the Cave Paintings, as desired by the Royal Asiatic Society."

This was seconded by S. G. T. Heatly, Esq. and carried.

The Secretary then proposed, seconded by Lieut. Col. Forbes, that the following gentlemen; viz.

W. B. O'Shaughnessy, Esq., Lieut. Col. Forbes, R. Frith, Esq., J. Fulton, Esq., Chas. Huffnagle, Esq., Revd. J. Hæberlin, E. Blyth, Esq., H. Piddington, Esq., S. G. T. Heatly, Esq., A. Webb, Esq. M.D., Capt. Marshall, Capt. Latter, H. Torrens, Esq. Secretary, be requested to act as a Special Committee, for carrying out the views of the Society in aid of the request of Government, and that they have power to add to their numbers, which was also agreed to.

Read the following letter in reply to the application made to Government by the Society, on the motion of the Rev. J. Long, for copies of any Medico-Topographical reports in possession of Government:—

No. 475.

*From T. R. DAVIDSON, Esq. Officiating Secretary to the Government of India, to
H. TORRENS, Esq. Vice President and Secretary, Asiatic Society, dated the 21st
September, 1844.*

Home Department.

Sir,—In reply to your letter dated 8th instant, I am directed to state, that the works required by the Society, are not amongst the records of this office.

I have the honor to be, Sir,

Your most obedient servant,

Council Chamber, the 21st September, 1844.

T. R. DAVIDSON,

Officiating Secretary to the Government of India.

Read the following letter from the Society's London Agents :—

HENRY TORRENS, Esq. Secretary to the Asiatic Society of Bengal.

SIR,—We beg to inform you, for the information of the Members of the Asiatic Society, that a bust of Mr. B. H. Hodgson has been commenced upon, (agreeable to the instructions conveyed in your letter of March last) by a Mr. Thornicroft, a talented Sculptor, who has been highly commended to Mr. Hodgson and to ourselves, by a party very competent to judge of such matters, having employed Mr. Thornicroft himself. The cost of the bust will be £84, in addition to which, there will be the shipping charges and insurance. As this sum is much less than the estimate given us, we beg to enquire if you think it would be desirable to appropriate any portion of the balance in the purchase of a Pedestal for the bust to stand upon. The cost of a suitable one of fine marble would be under £20; in scagliola, it would not be more than half that price. We shall be obliged by the favor of a reply by return of the Mail, as by that time the bust will be nearly completed.

We have the honor to be, Sir,

Your faithful servants,

London, 2nd August, 1844.

Wm. H. ALLEN and Co.

It was decided, that as a pedestal for the bust had been already placed in the Society's Meeting Hall; the cost of importing one was needless.

Read the following acknowledgment and advice of remittance from the Secretary Agra School Book Society :—

H. PIDDINGTON, Esq. Calcutta.

MY DEAR SIR,—I have the pleasure to send a draft on Calcutta for Rs. 548:6:6, the amount of the Asiatic Society's Bill against the Agra School Book Society. The cost of the Sanscrit Books for the Maharaja I hope also to remit soon, as I am in communication with Captain French on the subject.

I hope to hear that you have succeeded in procuring me a copy of the Sanscrit Euclid, believe me,

Yours,

4th September, 1844.

J. MOORE.

Read the following letter from Lieut. Yule, B. E. to the Sub-Secretary :—

H. PIDDINGTON, Esq., Calcutta.

MY DEAR SIR,—You were kind enough to give insertion in the Asiatic Society's Journal, to the two notes on the iron of the Kassia hills, which I forwarded two years ago, when on the point of leaving that part of the world. Having collected a good many miscellaneous notices of the people and country during an abode of two seasons in it, it has lately struck me, that some of them were sufficiently curious to be worth publishing, and so little has been given to the public on the region (which is so interesting to me that I cannot well judge what interest it may have for others,) that

I cannot but suppose much of these notes must be new. I should be much gratified if the sheets enclosed should be thought worth printing in the Journal. If not kindly return them.

Kurnaul, September 12, 1844.

H. YULE.

The beautiful and spirited pen and ink drawings which accompanied this valuable paper were greatly admired, and the paper was handed to the Editors of the Journal for early publication. On the suggestion of Lieut. Col. Forbes it was agreed to, that the Secretary should address the Military Board, requesting copies of Lieut. Yule's reports, plans and sections of the country about Chirra Poonjee.

The Secretary announced to the meeting the death of Mr. W. C. Colton, the Assistant Librarian, whose conduct during the time he had been employed, was most creditable, and rendered his loss one much to be regretted.

The Secretary presented, on the part of Dr. Roer, a translation of the Vedanta Sara, which was referred to the Editors of the Journal for publication.

The Secretary presented, on the part of J. Avdall, Esq. an Essay "On the Invention of the Armenian Alphabet," which was also referred to the Editors of the Journal.

The Secretary presented from Dr. Spilsbury, Superintending Surgeon, Sagor Division, for the Museum,

Two large silver coins, dug up at Baitool.

Two smaller coins, dug up at Hoshungabad.

A small gold coin, dug up at Jubbulpoor.

Read a paper from Captain J. W. Abbott, Artillery, Dum Dum, giving some account of the fall of an Aerolite in Khandeish. The specimen was referred to Mr. Piddington, as Mineralogical Curator, for examination and report, and the paper for incorporation with the report.

The Secretary also presented on the part of Captain Abbott, a paper "On the occurrence of Granite in the bed of the Nurbudda," which was referred to the Editors of the Journal for publication.

The Secretary also presented on the part of Col. Stacy, C. B., through Captains Wroughton, B. N. I. and Wintle, B. N. I., two splendid speci-

mens of petrified bone, probably part of the Femur of the great fossil elephant or mastodon, and a carved monumental marble slab which had formed the head-stone of a Mussulman grave. This specimen is a good one of its kind, the sculpture being elegantly executed, and the stone furnishing interesting evidences of a practice formerly common, but now extinct among the Mussulmans of India, the placing head-stones, namely, in memory of deceased persons.

Read the following letter from Captain Macleod, Assistant Commissioner, Moulmein :—

MY DEAR TORRENS,—About two years ago I sent you two images like the present from the Mekkhara Prince at Amarpoora, they were found at Rangoon; no notice having been taken of them, his Highness has sent down two more. He has likewise sent me to be forwarded to you a coin (silver) found at a place called Haleng. It is Hindoo no doubt, there being no coin in Burmah. He likewise has sent a box, containing some black and yellow earths, a parcel of stones, a bottle of water, which is labelled, "Cure for Itch," or something to that purport, "Falling on both sides of the Khand Ywa hills." I believe the specimens are from the hills near the Arracan frontier, but I have written to ask; they are nothing I believe but limestone. He likewise presents the Society with a medical work of great repute in Burmah and Siam.

He wishes me to send him some books, and asks particularly for a work on Chemistry, one on Hindoo Astronomy, one on Comets and one on Electricity. He can read English with the assistance of a dictionary. Would you kindly allow me to take the liberty of asking you to get Mr. Piddington to fill up the blanks in the enclosed note, and send it to Messrs. Ostell and Co. Mr. Piddington will know better than I do what elementary works on the subjects I have mentioned, would be most useful to the prince.

Moulmein, 3rd August, 1844.

The models, which are of coarse earthenware and of an ovoid form about six inches by four, are simply figures of Budh (Guatama,) surrounded by his usual attributes, but with a *Deva Nagree* inscription below the figure! which is probably what has excited, and very naturally, the curiosity of the Prince.*

The Secretary was instructed to meet the Prince's wishes in every way in his power.

N.B. A paper has intermediately been published upon the silver coin above noted by Lieut. Latter.

The Sub-Secretary stated, that he had forwarded to Captain Macleod, the following works; viz.

* In the Society's collection we have the converse to this. A figure of Krishna, about three feet high, carved in common sandstone, but in good preservation, with medal of Buddh, (Guatama,) on his forehead like a lady's ferroniere!—Eds.

Thomson on Heat and Electricity ; O'Shaughnessy's Manual of Chemistry ; O'Shaughnessy's Manual of Electricity ; but that he could not find any work treating specially of Comets ; and that with respect to a work on Hindu Astronomy, it was not stated if it was a European work on that subject or a Native one which was desired, and that he should communicate with Captain Macleod on the subject. The specimens had not yet been examined. He subsequently learned, that Messrs. Ostell and Co. had forwarded Bentley's Hindu Astronomy.

Read the following note from Captain Bigge, Assistant Commissioner in Assam, accompanying the presentation to which it refers :—

Tin Coins from Pahang on E. coast of Malay Peninsula, North from Singapore ; 16 go to the dollar ; and these were received from a fisherman off the mouth of the river, in change on a purchase of fish. To coin similar monies is severely punished by mutilation and death. The smaller coin is the Dutch doit from Batavia. J. B.

Read the following reports from the Librarian :—

To H. TORRENS, Esq., *Secretary Asiatic Society.*

SIR,—I have the honour, by your direction, to report respecting the communication on the part of our Society with the Royal Irish Academy. The Royal Irish Academy, as appears from our MSS. Proceedings, is one of those eight Institutions, (viz. the Royal Society of London, the Royal Society of Edinburgh, Royal Irish Academy, Society of Antiquarians of London, Society of Antiquarians of Edinburgh, the Linnaean Society, American Philosophical Society, American Academy of Arts and Sciences) with which the Asiatic Society, March 1800, first opened an intercourse by sending them their Researches, and regularly transmitting them, whenever a new volume of the Researches was published. The Royal Irish Academy presented on their part, March 1806, a set of their Transactions, which presentation was, however, not repeated until 1837, from which time they regularly sent their periodical publications to the Society ; viz. its Transactions from vol. 17 to 19, pt. 2d, (Vide Journal Asiatic Society, Oct. 1837, Nov. 1839 and 1841, No. 116,) while I do not find in our Proceedings that the Society since 1837 has, by way of return, forwarded any of its publications to the Royal Irish Academy.

I avail myself of this opportunity to forward you a list of the learned institutions which have been in communication with our Society, by sending it their publications, so far as I have been able to ascertain this from our Proceedings.

I have the honour to be, Sir,

2d October, 1844.

Your most obedient servant,

E. ROSE.

List of the Institutions in communication with the Asiatic Society of Bengal, from its foundation up to the present date.

A. ENGLISH SOCIETIES.

1. Linnean Society of England, from 1800—1841.
2. Geological Society of England, from 1812 to the present date.
3. Society for the Encouragement of Arts, from 1808 to the present time.
4. Astronomical Society of London, from 1822 to the present time, (regular.)
5. Cambridge Philosophical Society, 1816, (not continued.)
6. Royal Asiatic Society, 1828.
7. Horticultural Society of England, since 1822, (not regular.)
8. Royal Society of London, from 1800—1838, (regular, as it appears.)
9. Antiquarian Society of London, from 1800 to the present date, (regular.)
10. Royal Society of Antiquarians of Edinburgh, from 1800.
11. Agricultural Society of England, 1828.
12. Zoological Society of London, from 1833—1843, (not regular.)
13. Athenaeum of Liverpool, 1834, (not continued.)
14. Society of Plymouth, 1828, (not continued.)
15. Statistical Society of London, 1838.
16. Royal Geographical Society, from 1839 to the present time, (regular.)
17. London Electrical Society, from 1842 to the present date, (regular.)
18. British Association for the advancement of Science, 1842.
19. Edinburgh Royal Society, from 1800—1834, (not regular.)
20. Royal Irish Academy, from 1800 to the present date, (regular from 1837.)
21. Agricultural Society of Calcutta, 1828, (irregular.)
22. Medical and Physical Society of Calcutta, 1822.
23. Bombay Royal Asiatic Branch Society.
24. Bombay Geographical Society.
25. Madras Literary Society, 1806.

B. OTHER EUROPEAN SOCIETIES.

26. Société de Caen, 1816, (not regular.)
27. Royal Academy of Caen, 1836, (not continued.)
28. Société Asiatique de Paris, from 1822 to the present date, (regular.)
29. Geographical Society of Paris, from 1825 to the present date, (regular.)
30. Société Royale de Bordeaux, 1828, (not continued.)
31. Royal Academy of Bordeaux, from 1833 to the present date, (regular.)
32. Académie Royale de Marseille, 1835 (not continued.)
33. Société Industrielle de Mulhausen, 1838, (irregular.)
34. Société de Physique et D'Histoire Naturelle de Genève, from 1833 to the present date, (regular.)
35. Société Helvétique des Sciences Naturelles, 1839, (not continued.)
36. Royal Society of Copenhagen, 1816, (not continued.)
37. Société Royale des Antiquaires du Nord, 1836.
38. Batavian Society, from 1828—1833.
39. Amsterdam Royal Institute, 1838, (not continued.)
40. Hungarian Society, 1836, (not continued.)
41. Royal Academy of Munich.

C. AMERICAN SOCIETIES.

42. American Academy of Arts and Sciences, from 1795 (when presenting their memoirs.)
 43. Philosophical Society of Philadelphia, from 1800 to the present date.
 44. Academy of Natural Science at Philadelphia.
 45. Lyceum of Natural Science of New York, 1822—1833.
 46. National Institution for Promotion of Science, at Washington, 1843.

To H. TORRENS, Esq. *Secretary of the Asiatic Society.*

SIR,—I beg to submit a list of the incomplete and defective works of our Library, as a Supplement to that of the periodicals, which, on a previous occasion, I had the honour to lay before the Society.

To facilitate the use of this list, I have made several divisions. The letter A contains the works, which have not yet been completed by their authors; B those, of which the contents are unconnected with the immediate objects of the Society, and to complete which is not of urgent necessity; while under C are classed the books of reference, and those which bear upon the Researches of the Society. Lastly, D, includes the works which have been presented to the Society, and the subsequent volumes of which may be expected to be forwarded to the Library, as soon as published. Those which are marked by an asterisk, have already been mentioned in our Proceedings for July 1843.

Should the Society decide on an ultimate completion of these works, I would beg to suggest, firstly, that the books comprehended under C, should be completed, and that the Librarian should be authorized to procure them in Calcutta, before the present report is printed, as the prices of the books, if known to be wanted by the Society, would in consequence be raised.

I have the honour to be, Sir,

Asiatic Society's Rooms,

2nd October, 1844.

Your most obedient servant,

E. ROKEH.

List of the defective and incomplete Works, in the Library of the Asiatic Society.

A.

126. Works of Confucius, by J. Marshman, Serampore, 1809, vol. 1st.
 139. Beke's *Origines Biblicæ*, London, 1834, 8vo. vol. 1st.
 313. Arnott's *Physics*, London, 1825, (2 vols.) vol. 1st and 1st part of the 2d.
 584. Illustrations of Indian Botany, etc. of the Himalayan Mountains, by J. F. Royle, vol. 1st.

B.

English.

357. Astronomical Observations at Greenwich in 1816, by J. Pond, 1818, part of the 2d vol.
 391. American Almanac for 1836, 1838, and 1839, vols. 7, 9, 10.
 637. Luxmore on *Strictures*, Calcutta, 1814, No. 1.
 662. Lectures on Comparative Anatomy, by R. Grant, published in the "Lancet" for 1833-34, vol. 1st.
 678. Nautical and Hydraulic Experiments, by M. Beaufoy, London 1834, vol. 1st.
 730. The Farmer's Cabinet, Philadelphia, 1840, vol. 4th.

French.

352. *Histoire Céleste Française*, par J. de la Lande, Paris, 1801, tome 1er.
 362. *Connaissance des temps à l'usage des Astronomes*, Paris, 1760-1820, (the vols. for the years 1795 and 1804 wanting.)
 1152. (Heber's) *Voyage à Calcutta*, Traduit d'Anglais, vol. 2d.

Latin.

1593. *De Rebus Britannicis Collectanea*, Auct. F. Lelando, vol. 2d and 3d wanting.

C.

English.

- 190a. *Elements of Hindoo Law*, by T. Strange, vol. 1st.
 193. *Digest of Mahummedan Law*, by J. Baillie, Calcutta, 1805, fol. (4 vols.) vol. 1st.
 424. *Outlines of the Geology of England and Wales*, by W. D. Conybeare, London, 1821, part 1st.
 529. *Icones Plantarum Indicas Orientalis*, by R. Wight, Madras, 1838-39, 2 vols. (of vol. 1st Nos. 7 and 8 wanting.)
 536. *Zoological Journal*, London, 1835-36, 2 vols. (complete two vol. and published at 14*s.*)
 535. *Description of Malayan Plants*, by W. Jack, Appendix No. 3.
 543. *Zoological Researches*, by T. Thompson, No. 1 and 4.
 547. *Animal Kingdom of Cuvier*, with specific descriptions by E. Griffith, etc. vol. 10 wanting.
 549. *Illustrations of Indian Zoology*, by J. E. Gray, vol. 1st and of vol. 2d parts 11, 12, 15, 20.
 583. *Description and Figures of 200 Fishes of the Coromandel Coast*, by P. Russell, London, 1803, vol. 1st, (complete in two vols.) published at 8*s. 8*s.**
 663. *The Cyclopaedia of Anatomy and Physiology*, London, 1836, 2 vols. (complete in 4 vols.)
 807. *Reports on the State of Education in Bengal*, by W. Adam, 3d Report.
 836. *Memoir of the Histor. Society of Pennsylvania*, 1834, vol. 3d.
 879. *State Papers by the Earl of Clarendon*, Oxford, 1767-1786, 3 vols. (vol. 2d wanting.)
 1024. *History of the Indian Archipelago*, by J. Crawfurd, 3 vols. (vol. 1st wanting, 2*s. 12*s.**)
 1535. *Archæologia*, vol. 17th wanting.
 1545. *Antiquities of Herculaneum*, translated from the Italian, by T. Martyn and J. Lattie, vol. 1st, part 1st, London, 1773.
 1681. *Grammar of the Arabic Language*, by M. Lumsden, Calcutta, 1805, fol. vol. 1st.
 1843. *Dictionary of the Malay Tongue, as spoken in the Peninsula of Malacca*, by J. Horviser, London, 1801, part 1st.
 1846. *Dictionary of the Chinese Language*, by R. Morrison, Macao, 1815, vol. 1st, part 1st, and vol. 2d part 2d.
 N. B.—This work is published in 7 vols. from 1815—1821. The original price of which is 11*s. 5*s.** but it may now be obtained at 8*s. 10*s.**

French.

581. *Histoire Naturelle des Poissons*, par M. de Cuvier, (1st vol. of plates wanting.)
 1171. *Voyage du Levant ou 1692*, par M. Robert, (incomplete.)
 1300. *Voyage aux Régions Equinoctiales du Nouveau Continent*, par A. de Humboldt, (Atlas wanting.)
 1536. *Géographie*, par E. Mentelle et Maltebrun, (vols. 1st, 3d, 4th, 7th and 9th wanting.)
 2086. *Notices et Extracts des Manuscripts de la Bibliothèque Imperiale et autres Bibliothèques*, Paris, 1787—1813, (10 vols.) vol. 10th wanting.

Latin.

848. *Memoriæ Populorum*, etc. auct. F. G. Stritter, Petropoli, 1774—1779 (vol. 2d wanting.)
 897. *Monumenta Germaniæ Historica*, Ed. G. H. Pertz, Hanoveræ, 1826, fol. vol. 1st.
 1554. *Aegyptiaca*, by White, Oxford, 1801, part 1st.
 1915. *Lexicon Biographicum et Encyclopædicum à Mustafa Ben Abdalla comp.*
Ed. A. Lat. Vert. G. Flügel, Leipsig, 1837, 4to. tom. ii.

*D.**English.*

358. *Astronomical Observations at the Madras Observatory*, by J. Goldingham, 1824—1827, vols. 3—5.
 1421. *India*, by Rickard, 2 vols. (of vol. 1st p. 2d, and of vol. 2d pt. 1st and 2d wanting.)
 368. *Mécanique Céleste* of De la Place, translated by N. Bowditch, Boston, 1829—1839, vol. 1st and 2d. *

French.

- * 445. *Récherches sur les Poissons Fossiles*, par L. Agassiz, Neuchatel, (12 livraisons,) 4, 5, 7th livraisons wanting.
 * 387. *Histoire Naturelle des Poissons de l'eau douce*, par L. Agassiz, Neuchatel, fol. 1er livraison.
 * 1256. *Jacquemont's Voyage dans L'Inde*, (incomplete.)
 N. B.—See As. S. 1836, March and Dec. where M. Guizot, on the part of the French Government, offers to the Society those numbers of this work, which had then appeared.
 * Vendidad Sade, par E. Burnouf, 11 livraisons.
 * 1495. *Déscription de l'Egypt, ou Recueil des Observations et Récherches. Antiquités, Description*, tome 1er.
 Ditto ditto Antiquités, Mémoires, tome 1er.
 Ditto ditto Planches à ditto ditto tome 1er.
 Ditto ditto Etat Moderne, tome 1er et 2d.
 Ditto ditto Planches à ditto ditto
 Ditto ditto Histoire Naturelle, Planches, tomes 1er et 2d.
 Ditto ditto Préface Historique et Avertissement, tome 1er.
 1976. *Harriwansa*, traduit by A. Langlois, 1 and 3 livraisons.

German.

948. *Gemälde der Lebensbeschreibungen grosser Moslemischer Herrscher etc.*
v. J. v. Hammer, Leipsig, 1837—1838, vols. 4th and 5th.

943. Geschichte des Ormanischen Reichs v. J. v. Hammer, Pesth, 1827—1833,
vol. 3d wanting.

REPORT OF THE CURATOR MUSKUM OF ECONOMIC GEOLOGY, AND MINERALOGICAL AND GEOLOGICAL DEPARTMENTS, FOR THE MONTH OF SEPTEMBER.

My report for this month will be brief, for I have been still much engaged in Laboratory arrangements, which occupy more time than I anticipated.

Mineralogical and Geological.—Learning from the Introduction to Dr. Cantor's Chusan Report, that he had brought some Geological specimens with him, I deemed it my duty to make some enquiry for the collection. I learn, that it has been forwarded by the Government to the Honorable the Court of Directors. I should suggest, however, that if there be any duplicates, or the specimens admit of division, we might perhaps on application be favoured with a part of the collection; and nothing from a country so utterly unknown as China, can be without interest.

Dr. Rowe of the Artillery at Dum-Dum, sometime ago, forwarded me the four small specimens now on the table: of these two are of much interest; No. 4 is a true corundum, and No. 2 also is that variety of this little known stone which approaches to the emery of Naxos. Both these are new as Bengal minerals though found in Southern India, and I have written to Dr. Rowe for as exact an account of his locality as he can give me, for the purpose of requesting any one in the neighbourhood, and especially our active associate, Lieut. Sherwill, to investigate this spot carefully if he can visit it. A true emery corundum might be a valuable discovery if within moderate reach of carriage.

I now read Dr. Rowe's letter:—

MY DEAR SIR,—I shall feel extremely obliged, if you will at your leisure examine the accompanying specimens, and name them for me.

No. 1.—In indenting on the Commissariat Department for a medicine called "Toorbut," a Native substitute for Jalap,* the Commissariat Agent at this station bought a quantity of the accompanying, which I of course detected not to be a root, but a fossil, which on inquiry I find a Bunnea at the bazar here had obtained to cure Rheumatism, in the Burra-bazar at Calcutta. This is all the information I can obtain of it. I should much like to know what it is, and it has occurred to me, that you might be able to enlighten me. Its locality of course we cannot learn. While sending these articles, I have taken the liberty of sending three other small specimens of rocks, picked up by myself in marching down from Benares via the Old Hazareebaug and Bancoora route. May I ask the favor of your naming them also for me.

Dum-Dum, 8th August, 1844.

J. ROWE, Surgeon, Artillery.

Upon examining this curious fossil, the first impression, looking at the stalk, is that it must be a fruit, but I am inclined to think (and Dr. Wallich is so with me,) that it is not so, but that it is a petrified Zoophyte. The regular lines upon it much resemble those of some species of Cyathophyllum and Caryophyllum, and the articulation of the stem which I have been fortunate enough to obtain with some specimens, reminds us of that of some encrinites. Upon enquiry in the bazar, I find they are plentiful there; that they are brought by the Arab ships from Arabia, and called Huzoor el-é'hood.†

* The root of the Convolvulus Turpethum.

† More probably Huzor-al Loheid, i. e. Loheida stones? Hence, brought from Loheida?

They are sold as medicine, at 6 rupees per seer. It will be seen that amongst those I have obtained, some have parts of the matrix adhering to them, others have buds or gemmules, like the corallines, at their base; one has perhaps an incipient ramification like *Cyathophyllum*; another traces of a serpula adhering to it, and another the trace of a small oyster or other shell-fish; internally no trace of organisation is seen. Upon dissecting one of these in dilute muriatic acid, I find that it almost entirely dissolves, the solution being pure carbonate of lime with traces of iron, as usual in the grey coloured marbles. A small yellow, green residuum, in light flakey grains remains at the bottom of the glass, and when this was examined by the usual tests, it was found to be iron with trace of sulphur. Nothing of animal or vegetable matter, nor any siliceous spines as in the Echinidæ are traceable. We may I think call this fossil, (provisionally) *Loheidolite*, which does not pronounce upon its nature.

Museum of Economic Geology.

The following letter from the Secretary to the Government of the North Western Provinces, has been communicated to us by Government, with reference to our application for a search for Lithographic Stones.

No. 2166.

From the Under-Secretary to the Government of Bengal, to the Vice President and Secretary to the Asiatic Society, dated Fort William, 27th August, 1844.

SIR,—I am directed by the Honorable the Deputy Governor of Bengal, to transmit copy of a letter from the Secretary to the Government of the North Western Provinces, No. 733, dated the 12th instant, with its enclosures, and to request, that on the receipt of the Lithographic Stones, therein referred to, a report as to their quality may be forwarded to this office, for transmission to the Lieut. Governor of the N. W. Provinces.

I have the honor to be, Sir,

Your most obedient servant,

A. TUANBULL,

Under-Secretary to the Govt. of Bengal.

No. 733.

From J. THORNTON, Esq. Secy. to the Govt. N. W. P. Agra, to A. TUANBULL, Esq. Under-Secy. to the Govt. of Bengal, dated Agra, the 12th August, 1844.

Genl. Dept. N. W. P.

SIR,—I am directed to transmit to you, for submission to the Hon'ble the Deputy Governor of Bengal, the accompanying copy of a further correspondence with Captain Stewart, Fort Adjutant of Chunar, regarding Lithographic Stones, and to beg that His Honor may be favored with a report on the quality of the stones which have been sent down by that Officer to the Asiatic Society in Calcutta.

I have, &c.

Agra, the 12th August, 1844.

(Signed) J. THORNTON,
Secy. to the Govt. N. W. P.

(Copy.)

M. STEWART, Fort Adjutant, Chunar, to J. THORNTON, Esq.
Secretary to the Govt. N. W. P. Agra, dated 27th July, 1844.

In continuation of my letter of 20th May last, regarding the search for Lithographic Stones, I have the honor to acquaint you for the information of the Honorable Governor North West Provinces, that I sent out a party to the site from which specimens had been obtained before, with the view of ascertaining whether or not there were stones of better quality, by quarrying deeper into the stratum of white marble from the surface.

A square cut 12 feet deep has been made in two places, and four specimens of good quality have been selected and forwarded to the Secretary of the Government for the purpose of being tested at the Government Lithographic Press. They are decidedly of a firmer texture and finer quality than the surface specimen sent to the Sudder Board at Allahabad; but they are still much inferior to those, some specimens of which were forwarded for my inspection.

It will be more expedient to continue the search at the locality indicated by Captain Burke, and as the stones forwarded by him have been found to answer for Lithographic Stones, I have no doubt of ultimate success.

With the permission of the Honorable the Lieut. Governor, I should wish to avail myself of the services of Mr. C. H. Burke, late of the Revenue Survey Department, who is now living here as a pensioner; a small travelling allowance of (say) 100 Rs. per month, would be sufficient for all his wants, and fully attain the object I propose detaching him, provided the permission of the Lieut. the Governor is given by October.

I shall forward for counter-signature, a contingent bill in duplicate for the expenses of the late operations.

I have, &c.

1844. (Signed) W. M. STEWART, Captain,
Fort Adjutant, Chunar.

(Copy.)
No. 731.

Mr. J. THORNTON, Secretary to the Government North Western Provinces,
W. M. STEWART, Fort Adjutant, Chunar, dated Agra, the
27th July, 1844.

I am directed to acknowledge the receipt of your letter of the 27th ultimo, enclosing specimens of Lithographic Stones dispatched to the Asiatic Society in Calcutta, for the purpose of being tested at the Government Lithographic Press. It will be my desire to convey to you His Honor's thanks, for the exertions you have made in regard to the desired investigation.

His Honor is pleased to authorize you to pay Mr. Burke, the individual you employ in the search for Lithographic Stones, a sum not exceeding 200 rupees per month during the trip which he will make on this duty, at such times and in such amounts as you think best; but this sum is not to be considered a monthly allowance, and is likely to cause unnecessary protraction of an enquiry.

Proceedings of the Asiatic Society.

4. The Lieutenant Governor has been pleased to pass the bill so
the expenses already incurred in quarrying for stones, amounting to
the bill in question has been sent to the Civil Auditor, who will
audit, and the Accountant N. W. P. will be requested to instruct
Mirzapore to pay the amount to your order.

Singapore, the 12th August, 1844.

I have
(Signed) J. T.
Secretary to the Government

The report on the Stones sent down has not yet been received.

Ordered—That the reports be printed, that the Secretary
review the Society's correspondence with the Royal Irish
that the deficient works be completed as soon as practicable.

For all the foregoing presentations and communications
of the Society were voted.



Bound by
Bharati.
18, Patwari Bagh Lane,
Date 27.FEB.1959

